FIG.1

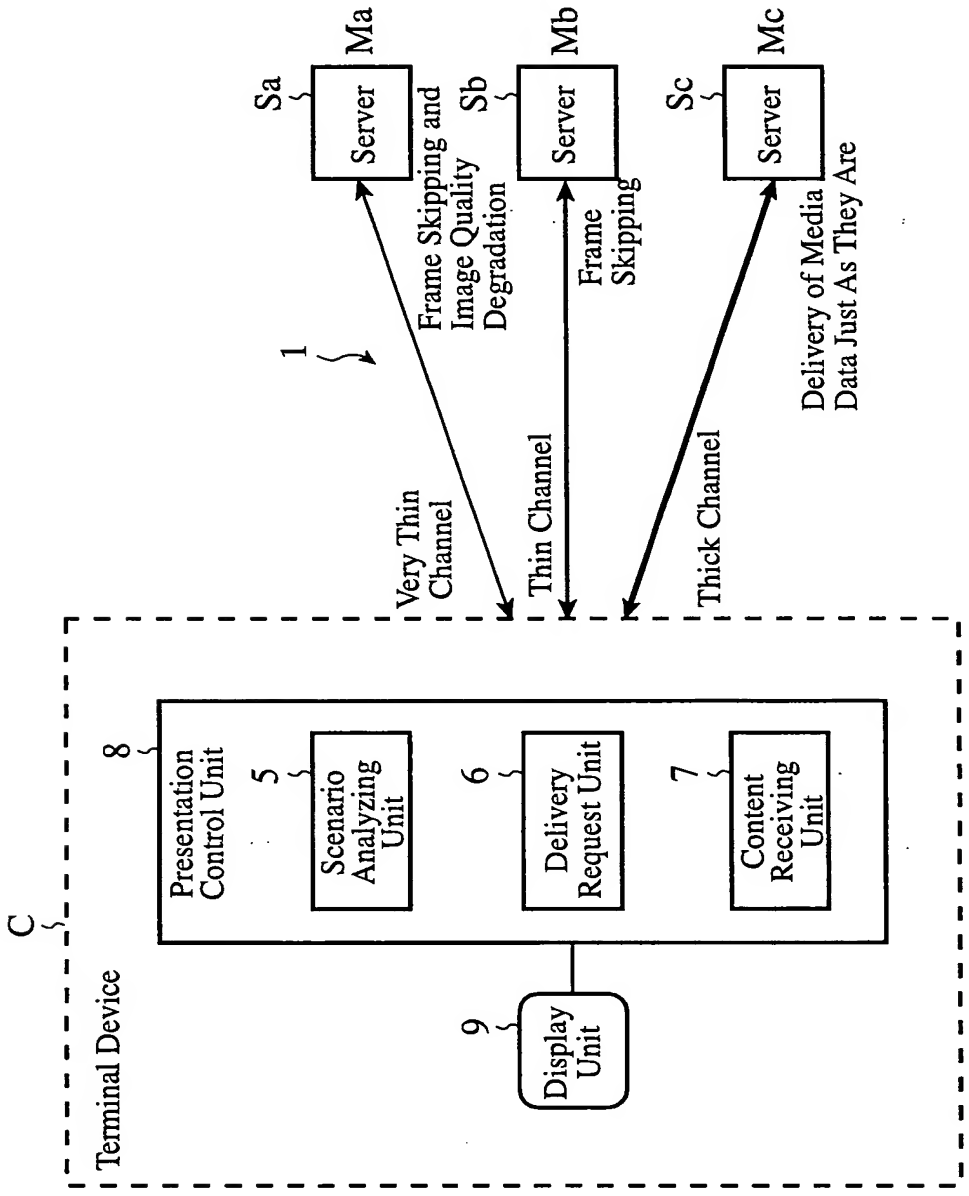

Sa
Ma
Server
Sb
Mb
Server
Sc
Mc
Server
Frame Skipping and Image Quality Degradation
Frame Skipping
Delivery of Media Data Just As They Are
1
Very Thin Channel
Thin Channel
Thick Channel
C
Terminal Device
8
Presentation Control Unit
5
Scenario Analyzing Unit
6
Delivery Request Unit
7
Content Receiving Unit
9
Display Unit

FIG.2

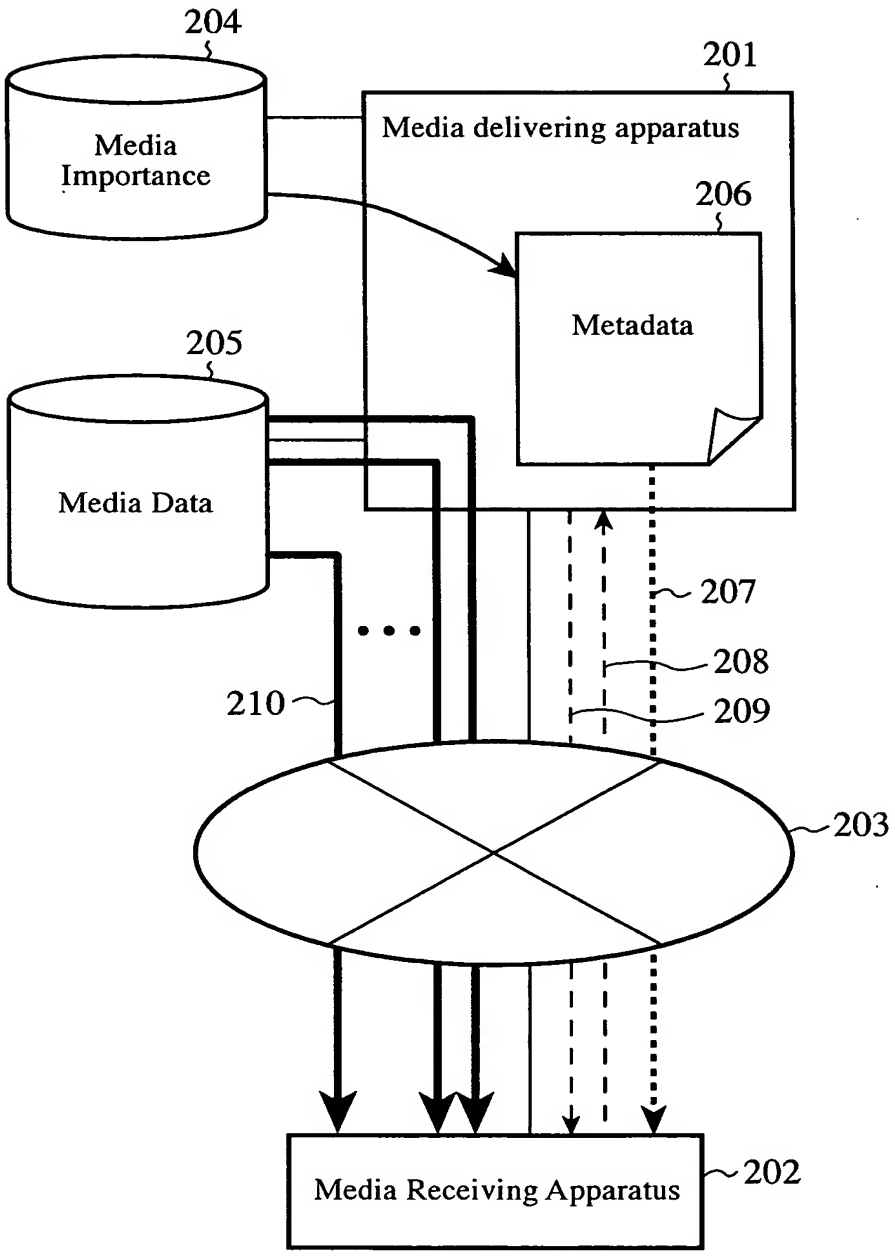

204
201
Media Importance
Media delivering apparatus
206
Metadata
205
Media Data
207
208
209
210
203
Media Receiving Apparatus
202

FIG.3

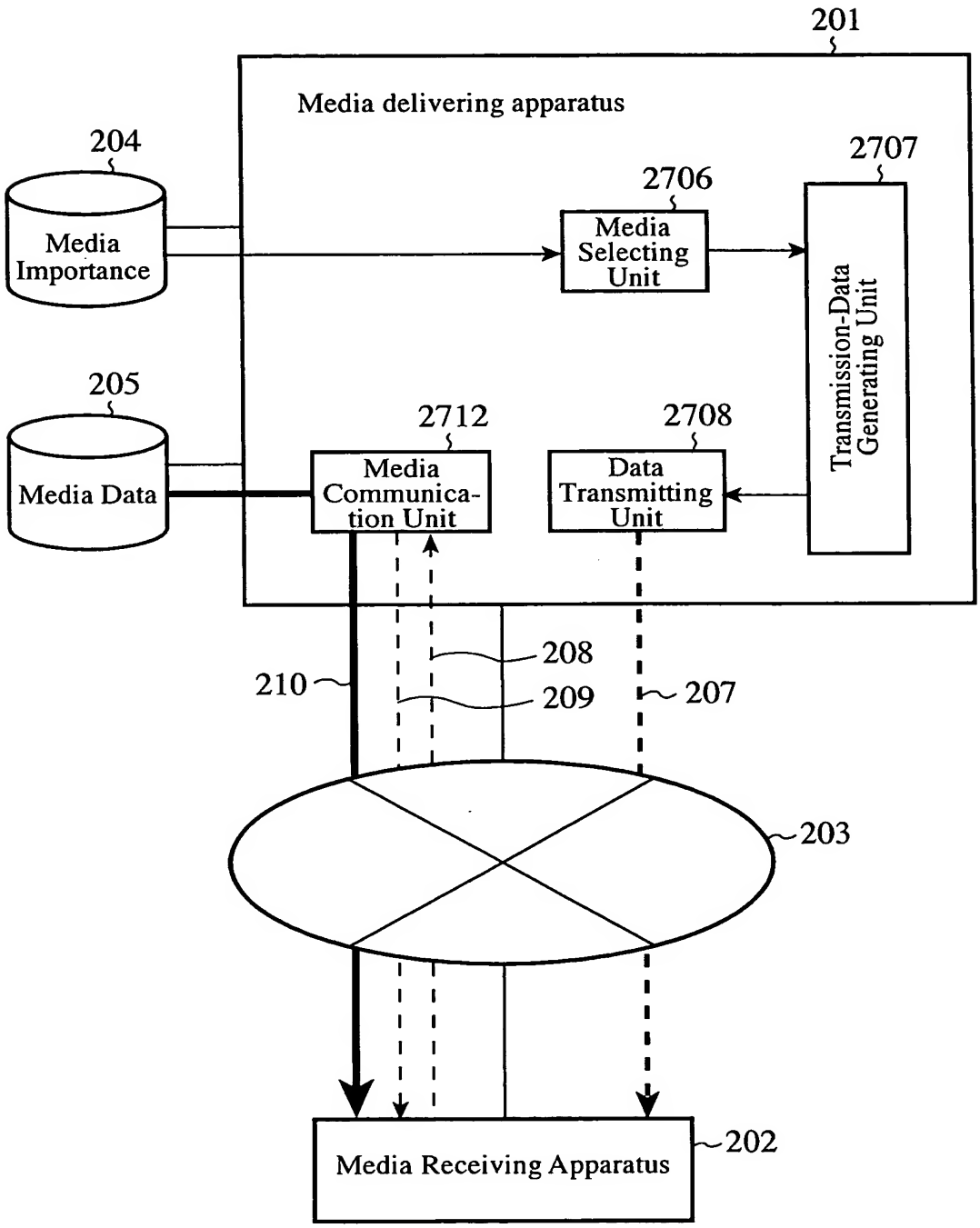

201
Media delivering apparatus
204
Media Importance
2706
Media Selecting Unit
2707
Transmission-Data Generating Unit
205
Media Data
2712
Media Communica-tion Unit
2708
Data Transmitting Unit
208
209
210
207
203
Media Receiving Apparatus
202

FIG.4

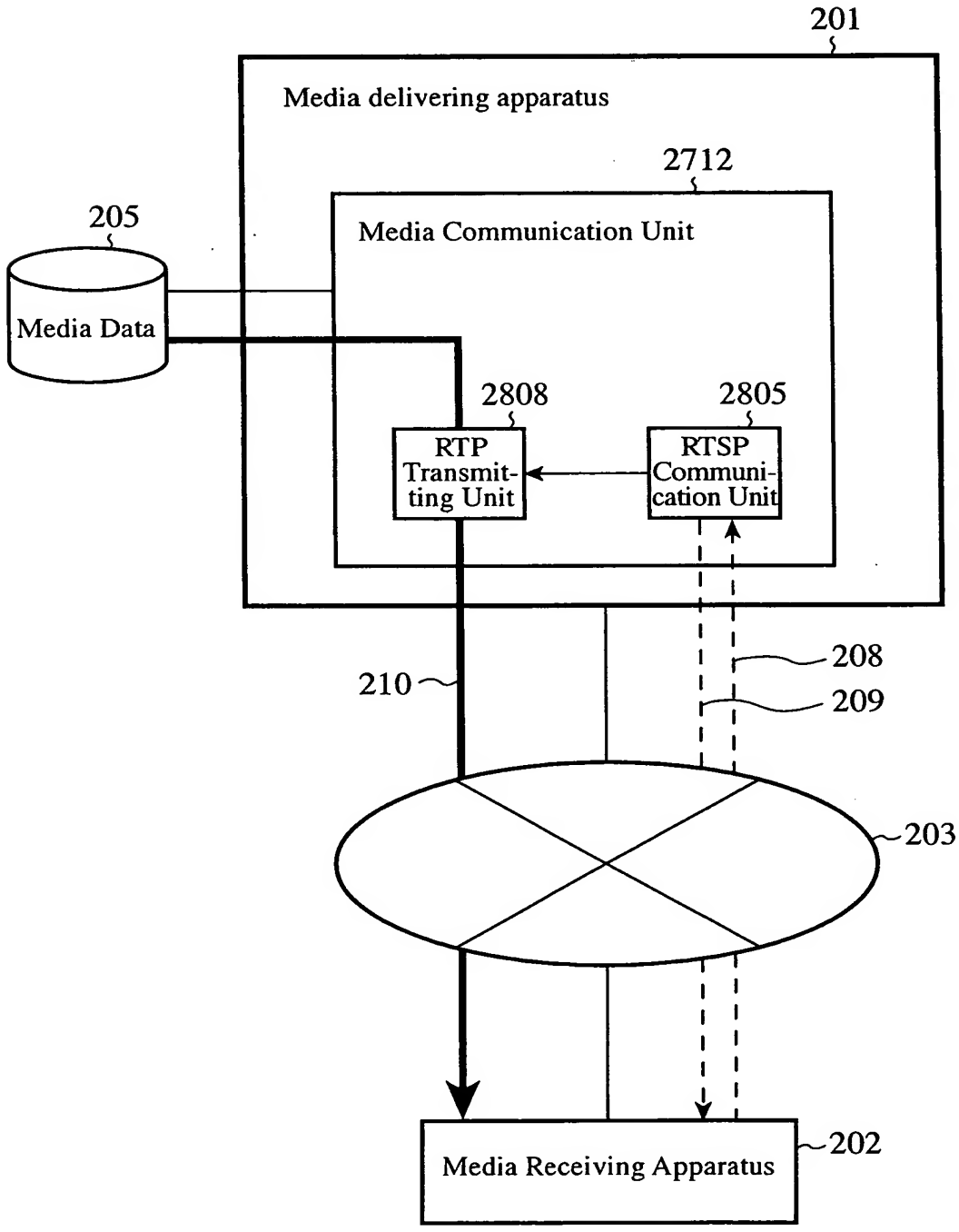

201
Media delivering apparatus
2712
Media Communication Unit
205
Media Data
2808
RTP Transmit-ting Unit
2805
RTSP Communi-cation Unit
208
209
210
203
Media Receiving Apparatus
202

FIG.5

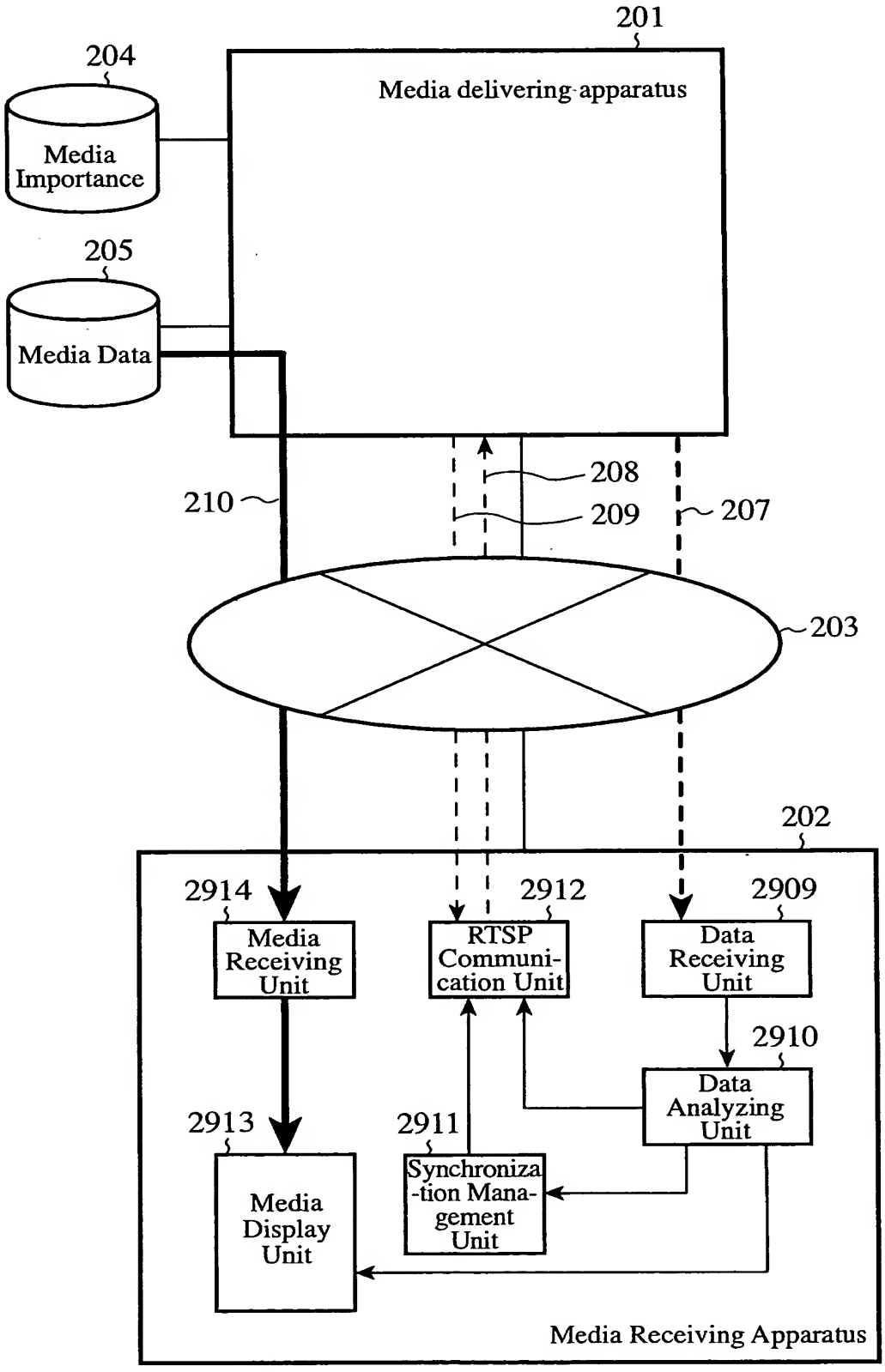

201
Media delivering apparatus
204
Media Importance
205
Media Data
208
209
207
210
203
202
2914
Media Receiving Unit
2912
RTSP Communi-cation Unit
2909
Data Receiving Unit
2910
Data Analyzing Unit
2913
Media Display Unit
2911
Synchroniza-tion Mana-gement Unit
Media Receiving Apparatus

FIG.6

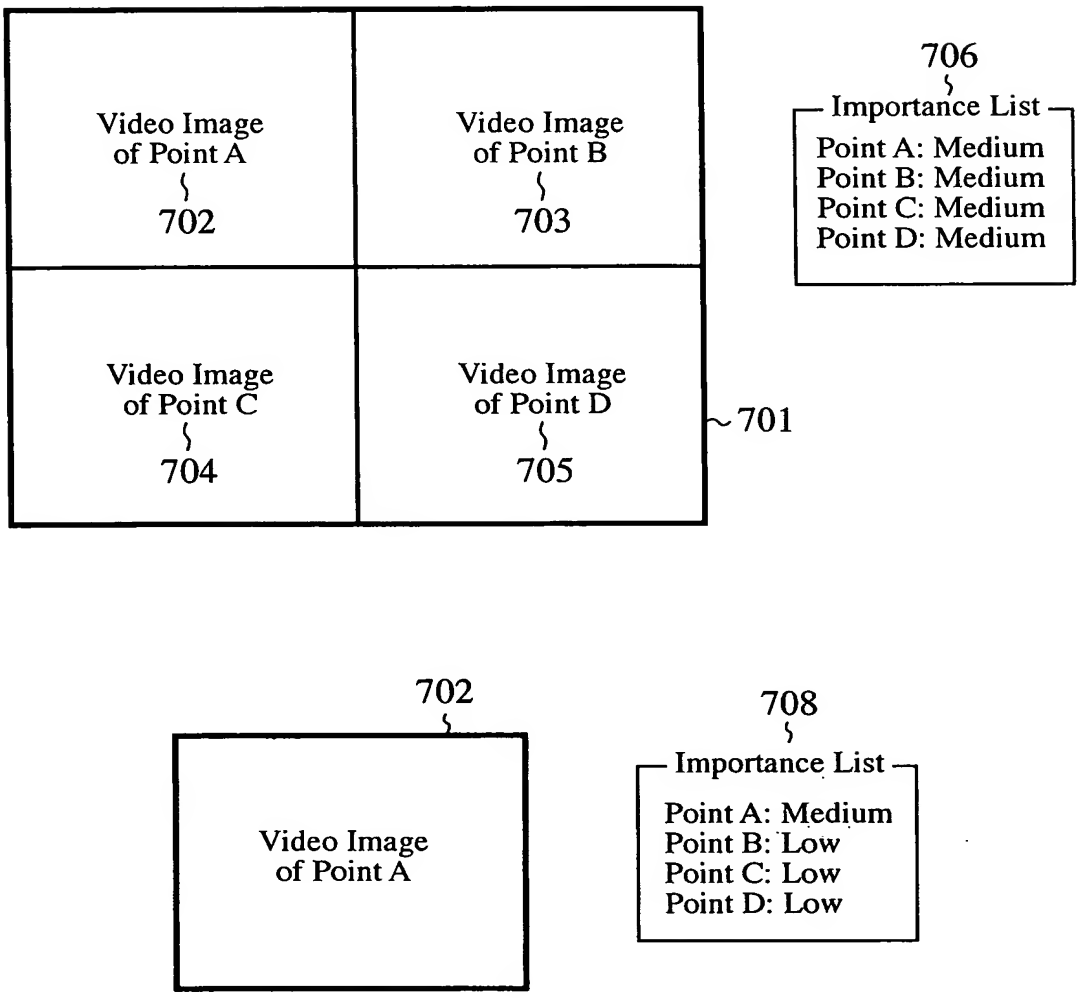

Video Image of Point A
702
Video Image of Point B
703
Video Image of Point C
704
Video Image of Point D
705
701
706
Importance List
Point A: Medium
Point B: Medium
Point C: Medium
Point D: Medium
702
Video Image of Point A
708
Importance List
Point A: Medium
Point B: Low
Point C: Low
Point D: Low

FIG.7

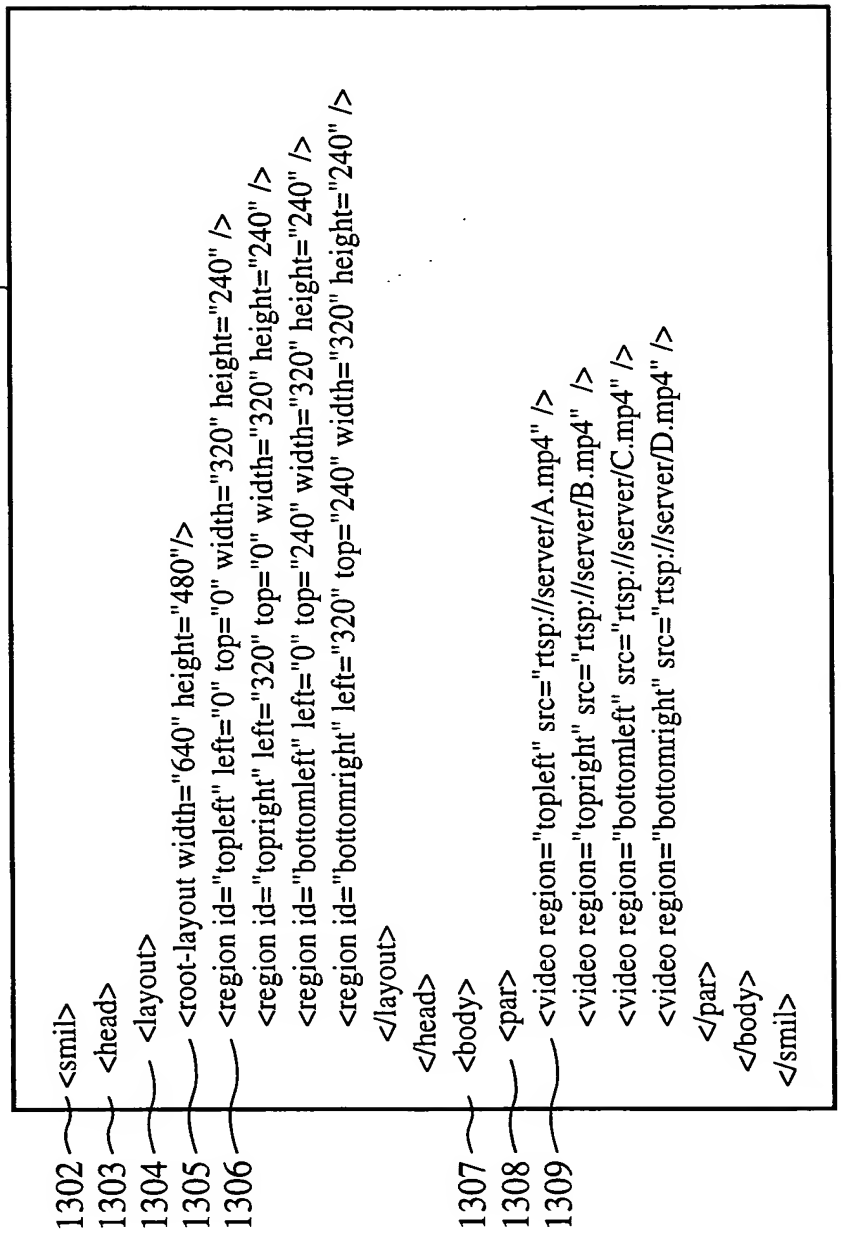

1301
1302
1303
1304
1305
1306
1307
1308
1309
<smil>
<head>
<layout>
<root-layout width="640" height="480"/>
<region id="topleft" left="0" top="0" width="320" height="240" />
<region id="topright" left="320" top="0" width="320" height="240" />
<region id="bottomleft" left="0" top="240" width="320" height="240" />
<region id="bottomright" left="320" top="240" width="320" height="240" />
</layout>
</head>
<body>
<par>
<video region="topleft" src="rtsp://server/A.mp4" />
<video region="topright" src="rtsp://server/B.mp4" />
<video region="bottomleft" src="rtsp://server/C.mp4" />
<video region="bottomright" src="rtsp://server/D.mp4" />
</par>
</body>
</smil>

FIG.8

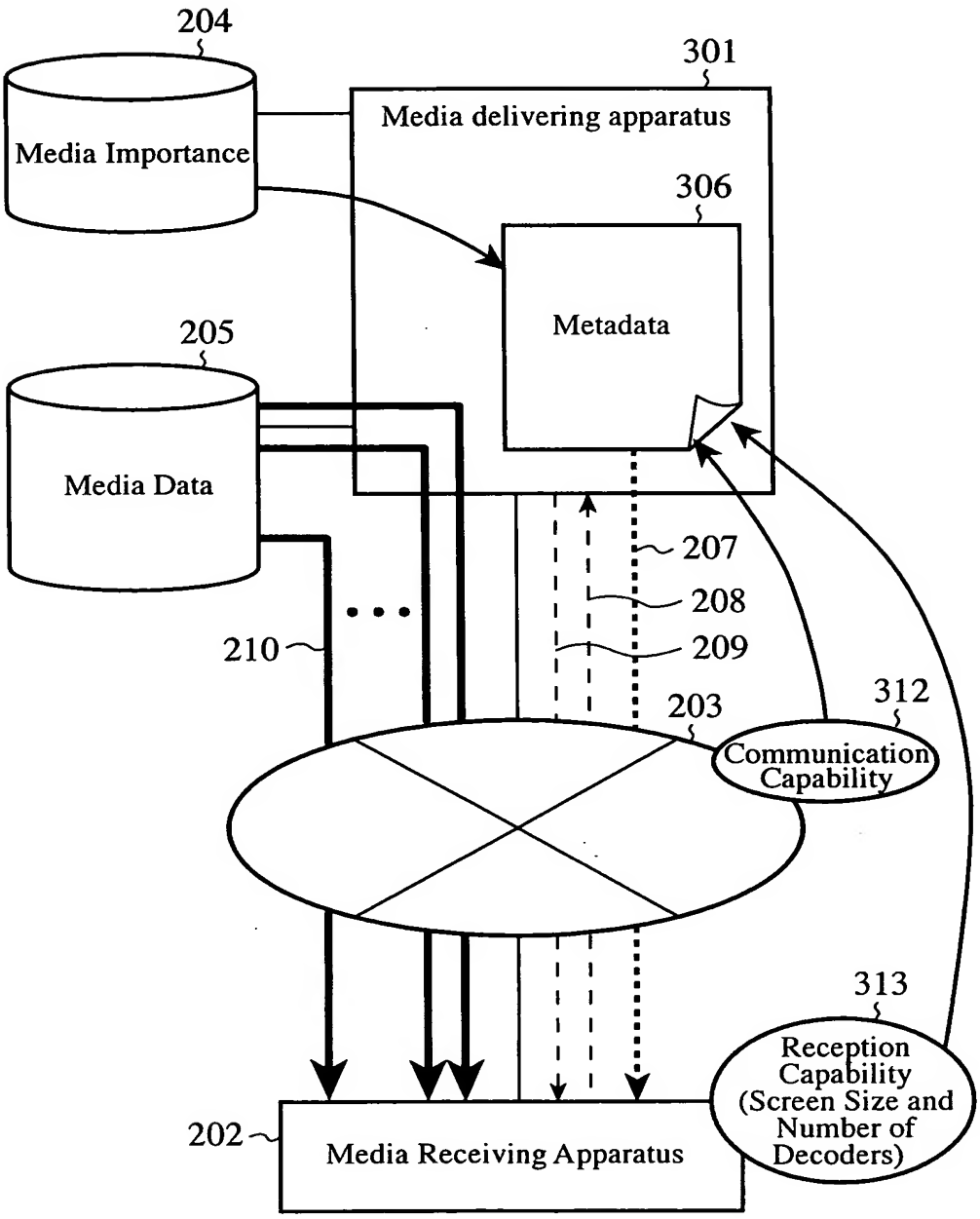

204
Media Importance
301
Media delivering apparatus
306
Metadata
205
Media Data
207
208
209
210
203
312
Communication Capability
313
Reception Capability (Screen Size and Number of Decoders)
202
Media Receiving Apparatus

FIG.9

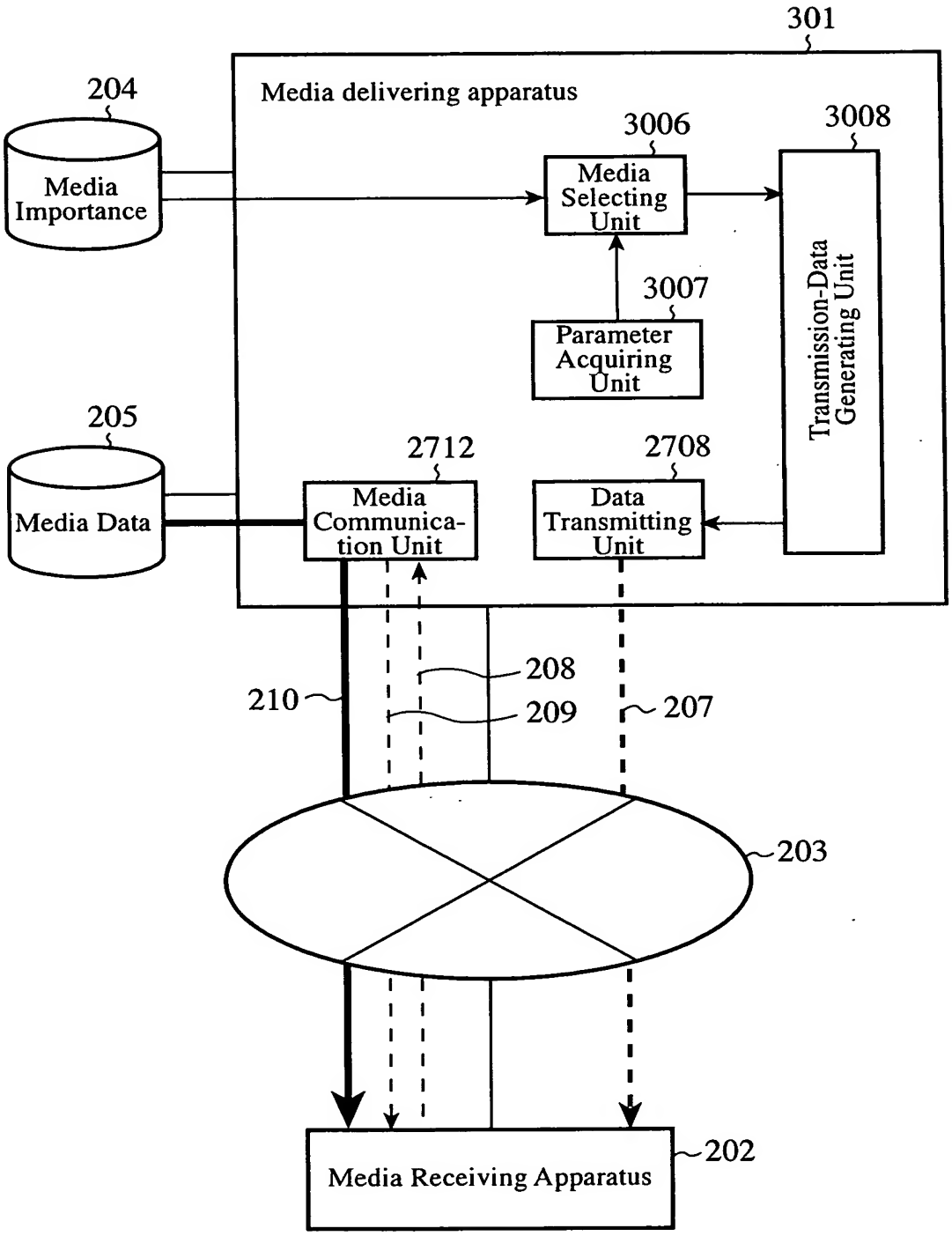
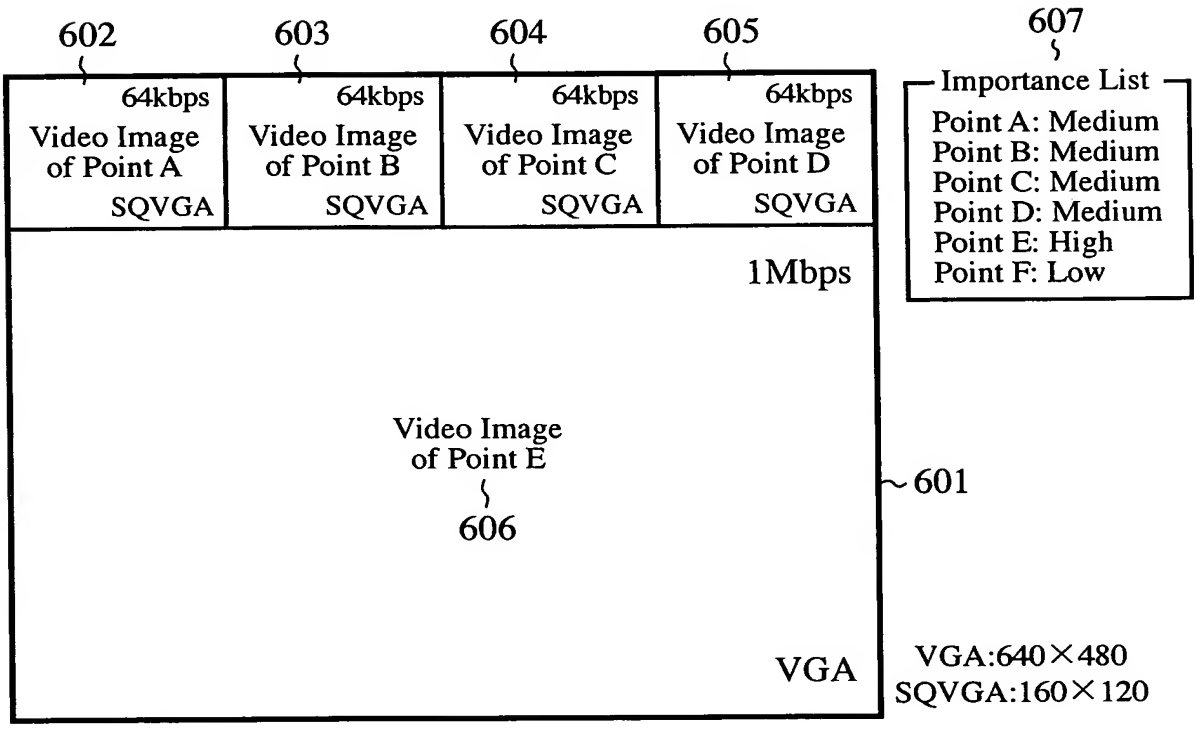

301
Media delivering apparatus
204
Media Importance
3006
Media Selecting Unit
3008
Transmission-Data Generating Unit
3007
Parameter Acquiring Unit
205
Media Data
2712
Media Communica-tion Unit
2708
Data Transmitting Unit
208
209
210
207
203
Media Receiving Apparatus
202

FIG.10



Communication Band of Network : 1.5Mbps
Display Resolution of Media Receiving Apparatus : XGA(1024×768)

FIG.11

1201

```
<smil>
 <head>
   <layout>
    <root-layout width="640" height="600"/>
    <region id="sumnail1" left="0" top="0" width="160" height="120" />
    <region id="sumnail2" left="160" top="0" width="160" height="120" />
    <region id="sumnail3" left="320" top="0" width="160" height="120" />
    <region id="sumnail4" left="480" top="0" width="160" height="120" />
    <region id="important" left="0" top="120" width="640" height="480" />
   </layout>
 </head>
 <body>
   <par>
    <video region="sumnail1" src="rtsp://server/A.mp4" />
    <video region="sumnail2" src="rtsp://server/B.mp4"  />
    <video region="sumnail3" src="rtsp://server/C.mp4" />
    <video region="sumnail4" src="rtsp://server/D.mp4" />
    <video region="important" src="rtsp://server/E.mp4" />
   </par>
 </body>
</smil>
```

FIG.12

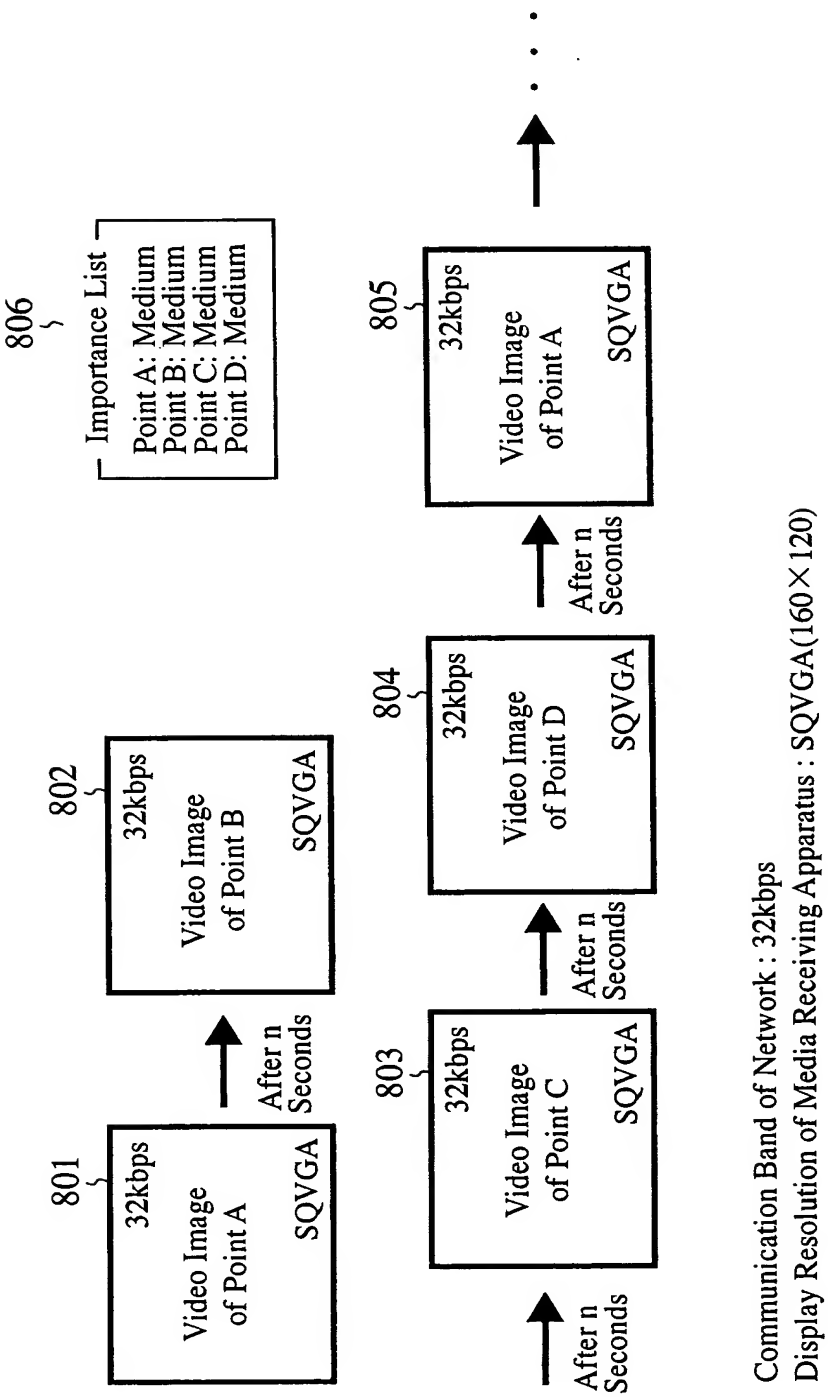

801
32kbps
Video Image of Point A
SQVGA
After n Seconds
802
32kbps
Video Image of Point B
SQVGA
After n Seconds
803
32kbps
Video Image of Point C
SQVGA
After n Seconds
804
32kbps
Video Image of Point D
SQVGA
After n Seconds
805
32kbps
Video Image of Point A
SQVGA
806
Importance List
Point A: Medium
Point B: Medium
Point C: Medium
Point D: Medium
Communication Band of Network : 32kbps
Display Resolution of Media Receiving Apparatus : SQVGA(160×120)

FIG.13

1401

```
<smil>
 <head>
   <layout>
    <root-layout width="160" height="120"/>
    <region id="one" left="0" top="0" width="160" height="120" />
   </layout>
 </head>
 <body>
1402  <seq repeat="indefinite" >
1403   <video region="one" src="rtsp://server/A.mp4" dur="30s" />
       <video region="one" src="rtsp://server/B.mp4" dur="30s" />
       <video region="one" src="rtsp://server/C.mp4" dur="30s" />
       <video region="one" src="rtsp://server/D.mp4" dur="30s" />
   </seq>
 </body>
</smil>
```

FIG.14

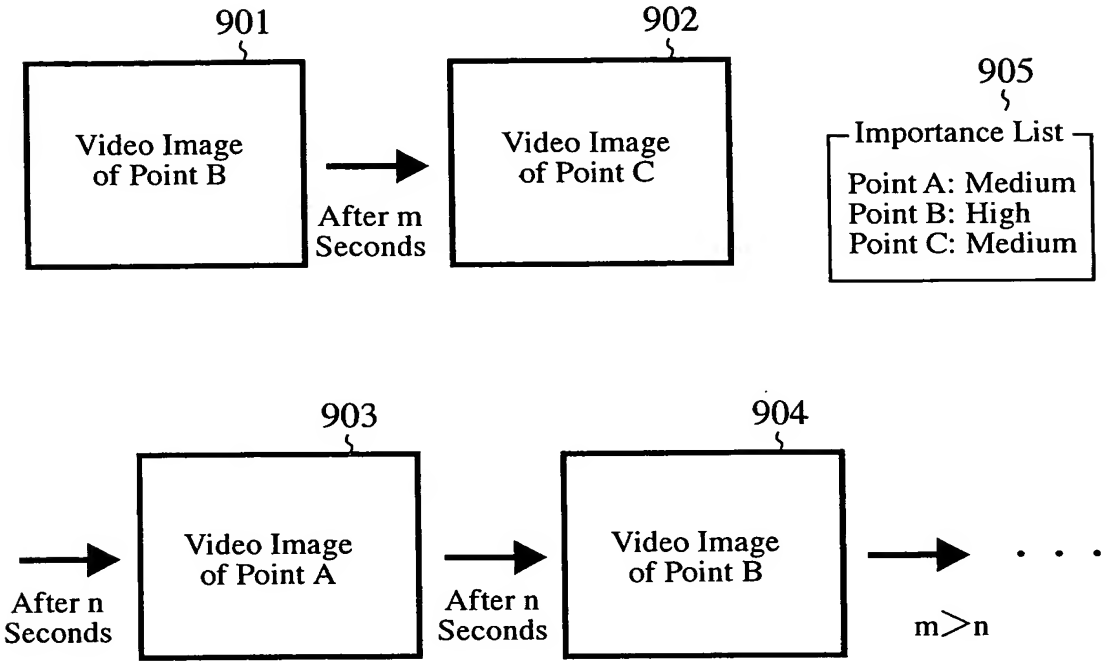


FIG.15

1601

```
<smil>
 <head>
   <layout>
    <root-layout width="160" height="120"/>
    <region id="one" left="0" top="0" width="160" height="120" />
   </layout>
 </head>
 <body>
   <seq repeat="indefinite" >
    <video region="one" src="rtsp://server/A.mp4" dur="30s" />
    <video region="one" src="rtsp://server/B.mp4" dur="60s" />
    <video region="one" src="rtsp://server/C.mp4" dur="30s" />
   </seq>
 </body>
</smil>
```

FIG.16

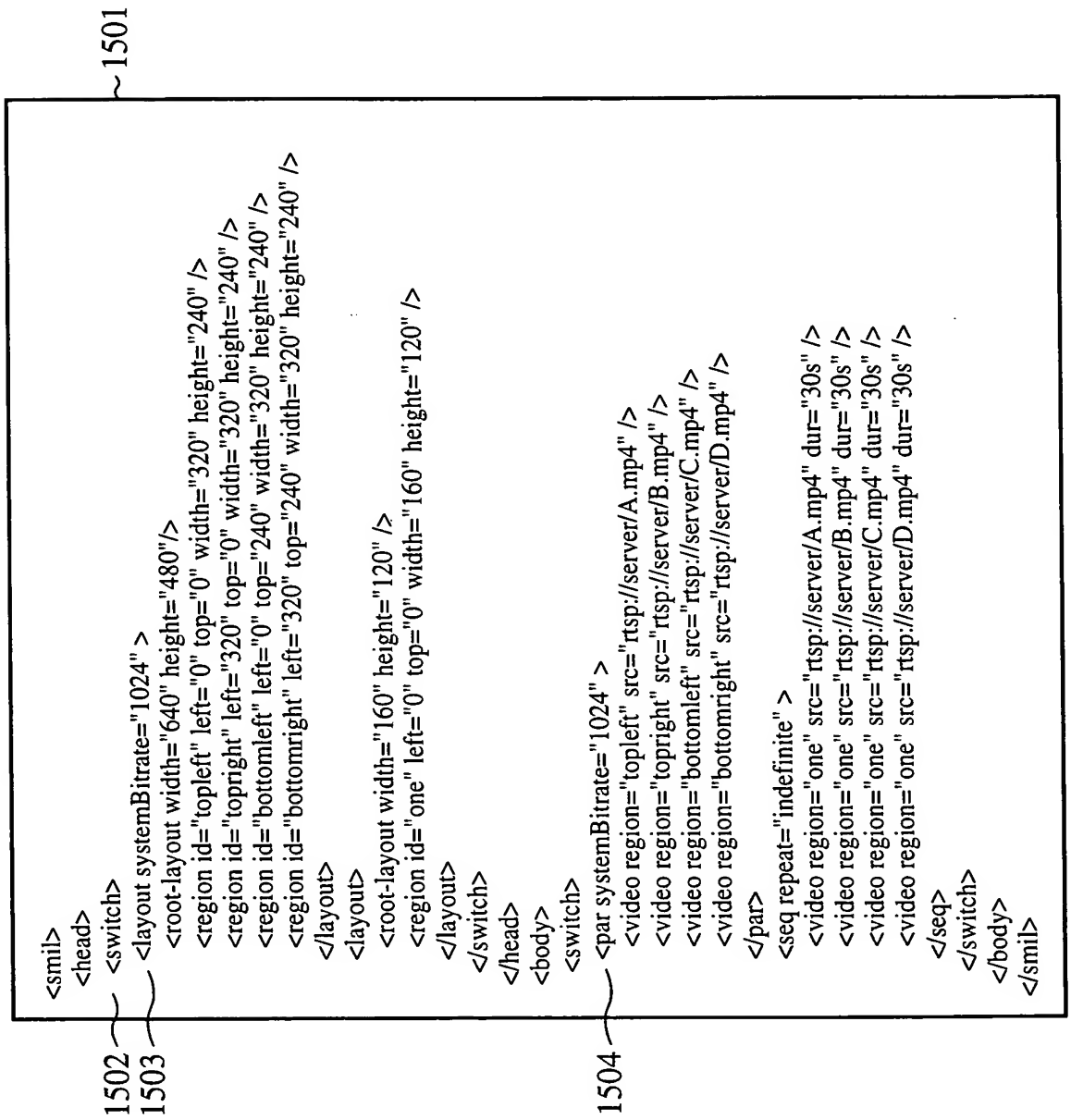

1501
1502
1503
1504
<smil>
<head>
<switch>
<layout systemBitrate="1024" >
<root-layout width="640" height="480"/>
<region id="topleft" left="0" top="0" width="320" height="240" />
<region id="topright" left="320" top="0" width="320" height="240" />
<region id="bottomleft" left="0" top="240" width="320" height="240" />
<region id="bottomright" left="320" top="240" width="320" height="240" />
</layout>
<layout>
<root-layout width="160" height="120" />
<region id="one" left="0" top="0" width="160" height="120" />
</layout>
</switch>
</head>
<body>
<switch>
<par systemBitrate="1024" >
<video region="topleft" src="rtsp://server/A.mp4" />
<video region="topright" src="rtsp://server/B.mp4" />
<video region="bottomleft" src="rtsp://server/C.mp4" />
<video region="bottomright" src="rtsp://server/D.mp4" />
</par>
<seq repeat="indefinite" >
<video region="one" src="rtsp://server/A.mp4" dur="30s" />
<video region="one" src="rtsp://server/B.mp4" dur="30s" />
<video region="one" src="rtsp://server/C.mp4" dur="30s" />
<video region="one" src="rtsp://server/D.mp4" dur="30s" />
</seq>
</switch>
</body>
</smil>

FIG.17

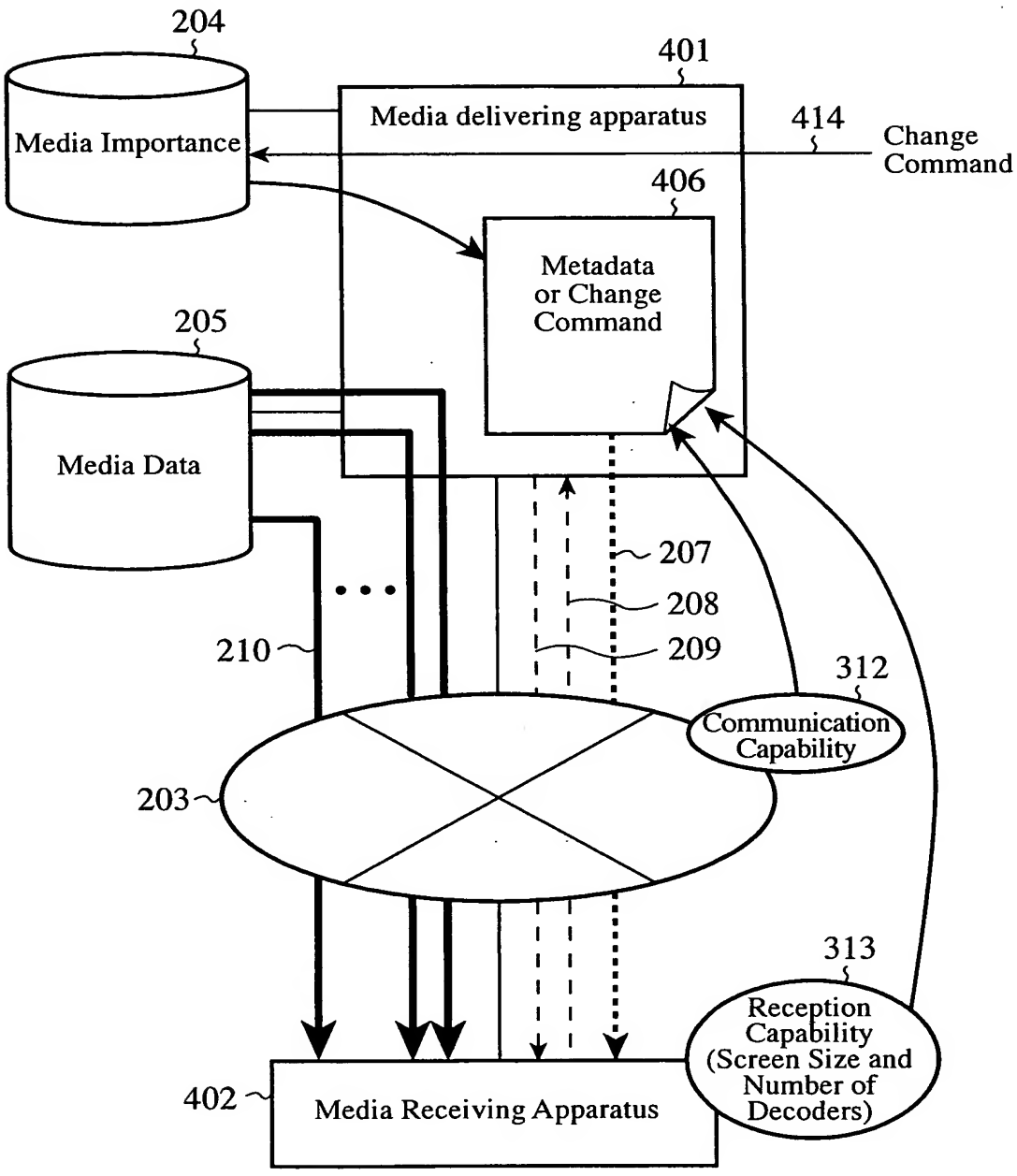

204
401
Media Importance
Media delivering apparatus
414
Change Command
406
Metadata or Change Command
205
Media Data
207
208
209
210
312
Communication Capability
203
313
Reception Capability (Screen Size and Number of Decoders)
402
Media Receiving Apparatus

FIG.18

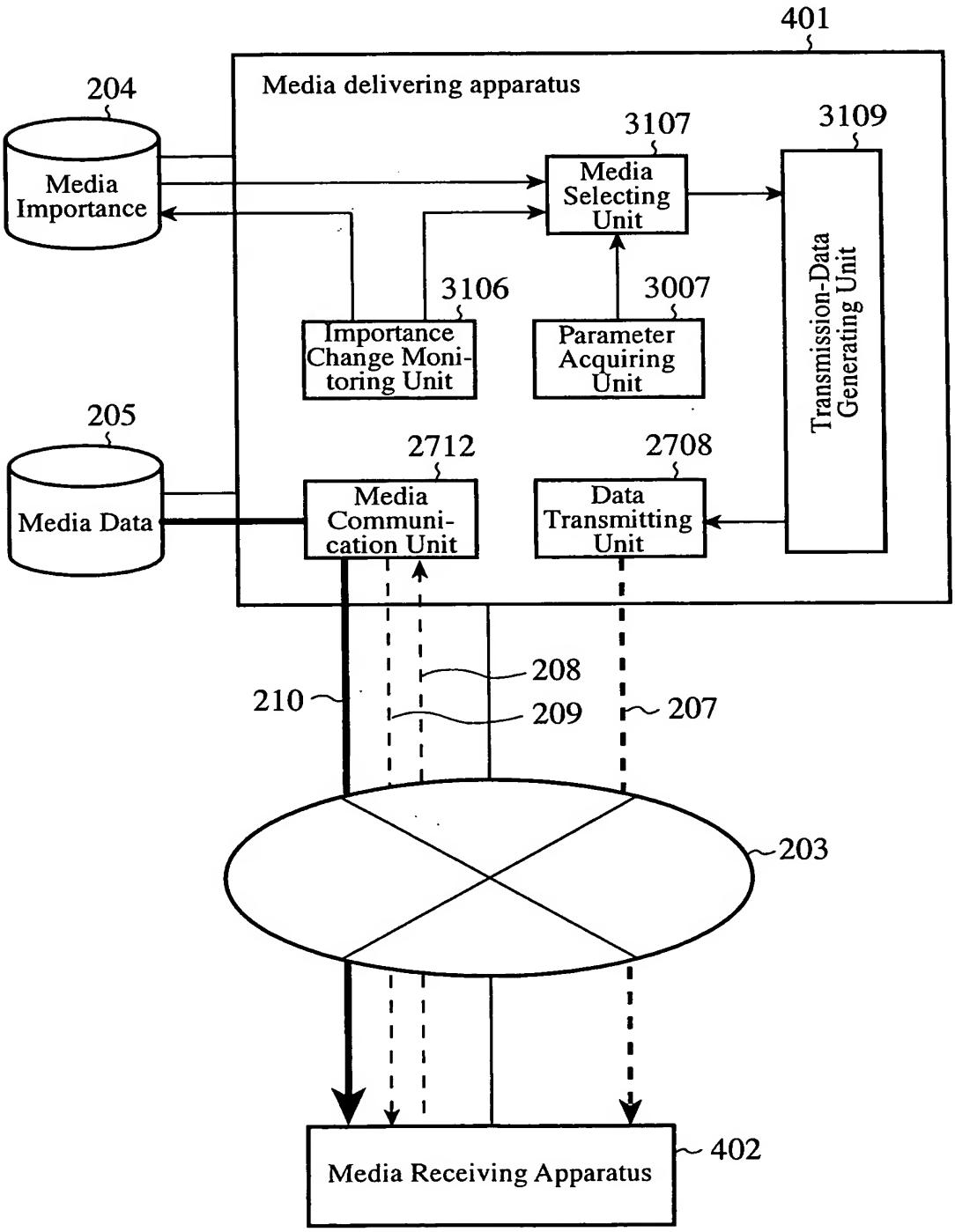

401
Media delivering apparatus
204
Media Importance
3107
Media Selecting Unit
3109
Transmission-Data Generating Unit
3106
Importance Change Monitoring Unit
3007
Parameter Acquiring Unit
205
Media Data
2712
Media Communication Unit
2708
Data Transmitting Unit
208
209
210
207
203
Media Receiving Apparatus
402

FIG.19

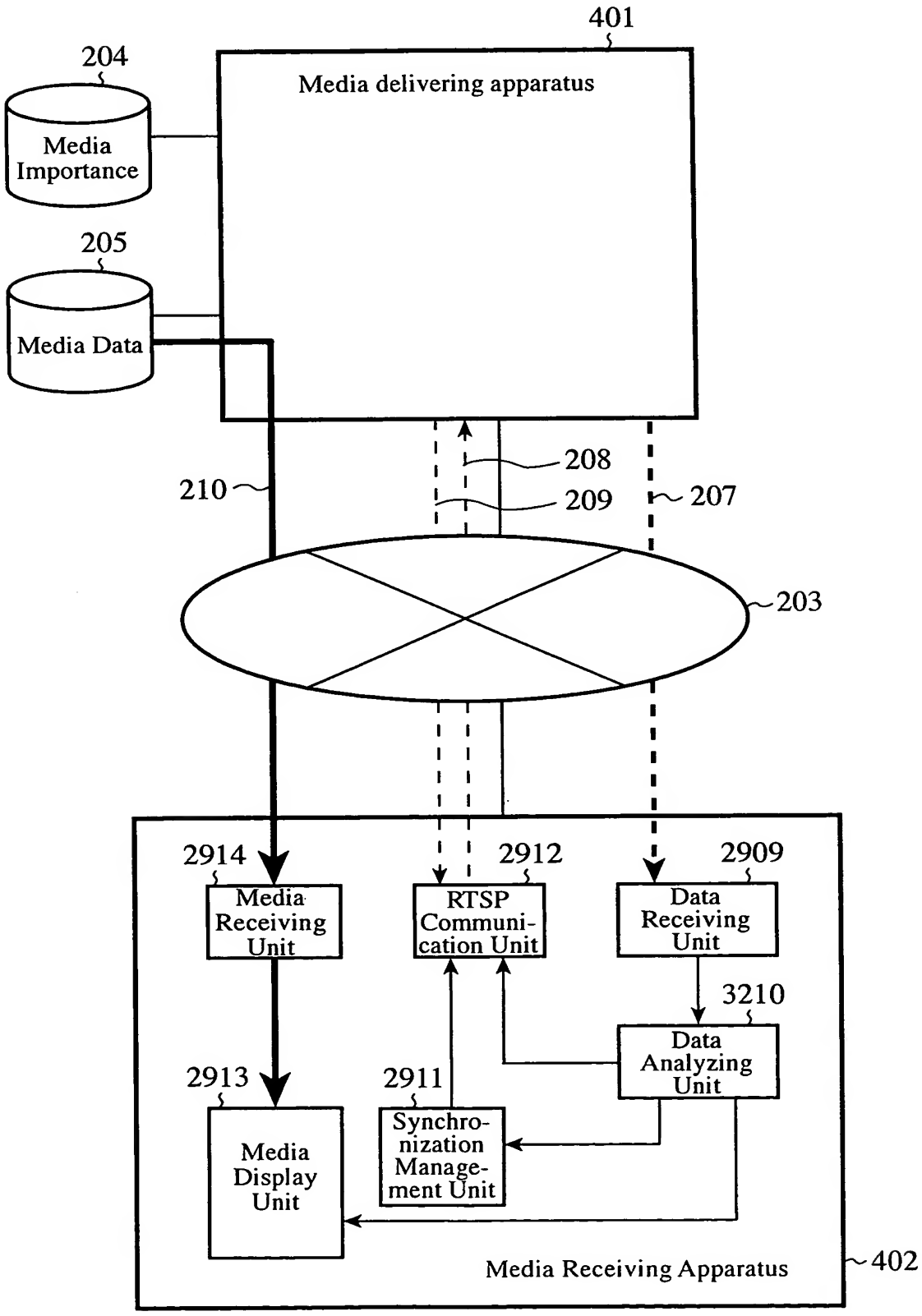

401
204
Media delivering apparatus
Media Importance
205
Media Data
208
209
207
210
203
2914
2912
2909
Media Receiving Unit
RTSP Communi-cation Unit
Data Receiving Unit
3210
Data Analyzing Unit
2913
2911
Media Display Unit
Synchro-nization Manage-ment Unit
Media Receiving Apparatus
402

FIG.20

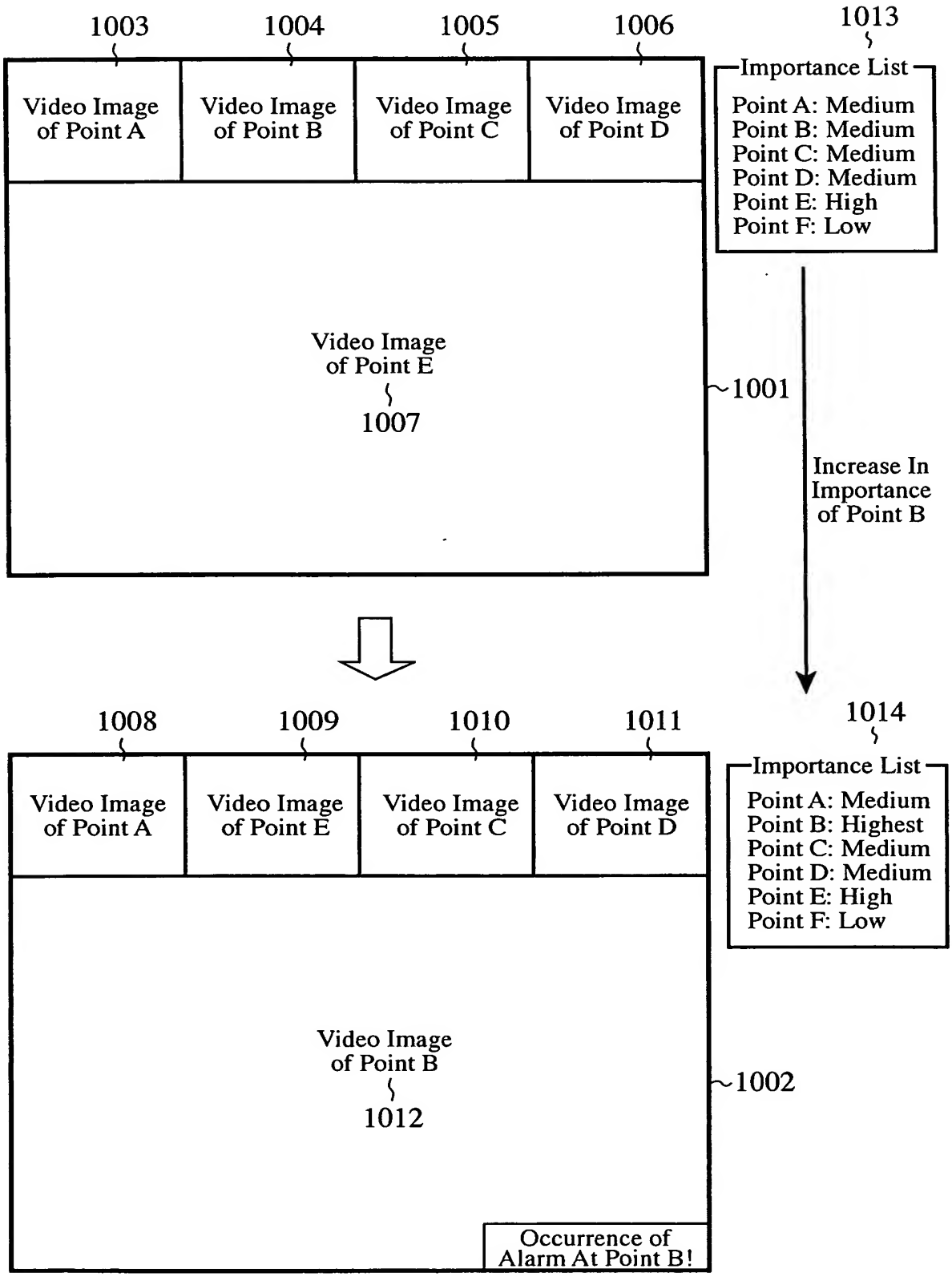

1003
1004
1005
1006
1013
Video Image of Point A
Video Image of Point B
Video Image of Point C
Video Image of Point D
Importance List
Point A: Medium
Point B: Medium
Point C: Medium
Point D: Medium
Point E: High
Point F: Low
Video Image of Point E
1007
1001
Increase In Importance of Point B
1008
1009
1010
1011
1014
Video Image of Point A
Video Image of Point E
Video Image of Point C
Video Image of Point D
Importance List
Point A: Medium
Point B: Highest
Point C: Medium
Point D: Medium
Point E: High
Point F: Low
Video Image of Point B
1012
1002
Occurrence of Alarm At Point B!

FIG.21

1701

Metadata

```
<smil>
 <head>
   <layout>
    <root-layout width="640" height="600"/>
    <region id="sumnail1" left="0" top="0" width="160" height="120" />
    <region id="sumnail2" left="160" top="0" width="160" height="120" />
    <region id="sumnail3" left="320" top="0" width="160" height="120" />
    <region id="sumnail4" left="480" top="0" width="160" height="120" />
    <region id="important" left="0" top="120" width="640" height="480" />
   </layout>
 </head>
 <body>
   <par>
    <video region="sumnail1" src="rtsp://server/A.mp4" />
    <video region="sumnail2" src="rtsp://server/B.mp4" />
    <video region="sumnail3" src="rtsp://server/C.mp4" />
    <video region="sumnail4" src="rtsp://server/D.mp4" />
    <video region="important" src="rtsp://server/E.mp4" />
   </par>
 </body>
</smil>
```

1703

Importance List
Point A: Medium
Point B: Medium
Point C: Medium
Point D: Medium
Point E: High
Point F: Low

Increase In Importance of Point B

1702

Metadata

```
<smil>
 <head>
   <layout>
    <root-layout width="640" height="600"/>
    <region id="sumnail1" left="0" top="0" width="160" height="120" />
    <region id="sumnail2" left="160" top="0" width="160" height="120" />
    <region id="sumnail3" left="320" top="0" width="160" height="120" />
    <region id="sumnail4" left="480" top="0" width="160" height="120" />
    <region id="important" left="0" top="120" width="640" height="480" />
   </layout>
 </head>
 <body>
   <par>
    <video region="sumnail1" src="rtsp://server/A.mp4" />
    <video region="sumnail2" src="rtsp://server/E.mp4" />
    <video region="sumnail3" src="rtsp://server/C.mp4" />
    <video region="sumnail4" src="rtsp://server/D.mp4" />
    <video region="important" src="rtsp://server/B.mp4" />
   </par>
 </body>
</smil>
```

1704

Importance List
Point A: Medium
Point B: Highest
Point C: Medium
Point D: Medium
Point E: High
Point F: Low

FIG.22

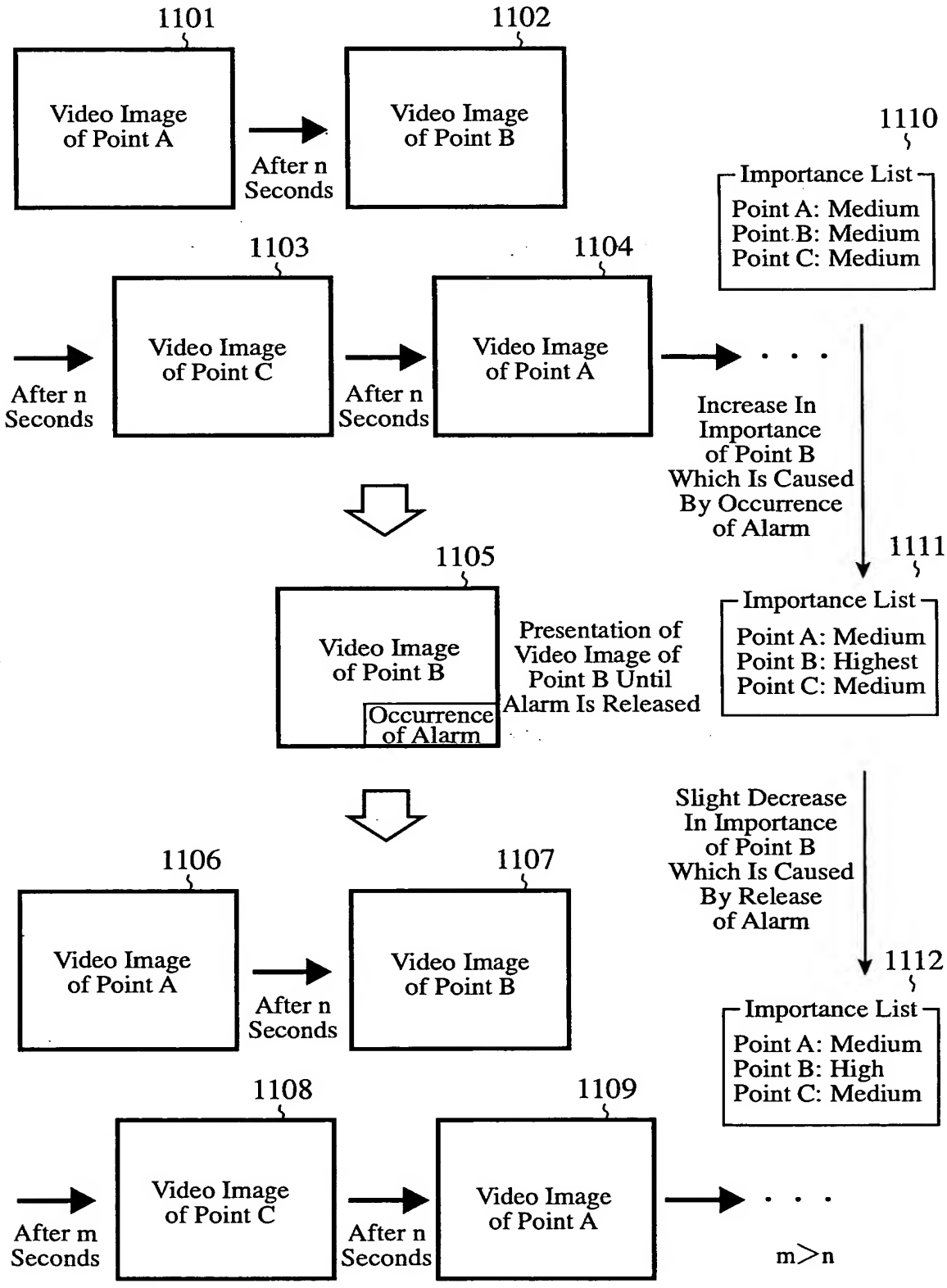

1101
Video Image of Point A
After n Seconds
1102
Video Image of Point B
1110
Importance List
Point A: Medium
Point B: Medium
Point C: Medium
1103
Video Image of Point C
After n Seconds
1104
Video Image of Point A
Increase In Importance of Point B Which Is Caused By Occurrence of Alarm
1111
Importance List
Point A: Medium
Point B: Highest
Point C: Medium
1105
Video Image of Point B
Occurrence of Alarm
Presentation of Video Image of Point B Until Alarm Is Released
Slight Decrease In Importance of Point B Which Is Caused By Release of Alarm
1112
Importance List
Point A: Medium
Point B: High
Point C: Medium
1106
Video Image of Point A
After n Seconds
1107
Video Image of Point B
1108
Video Image of Point C
After m Seconds
1109
Video Image of Point A
After n Seconds
m>n

FIG.23

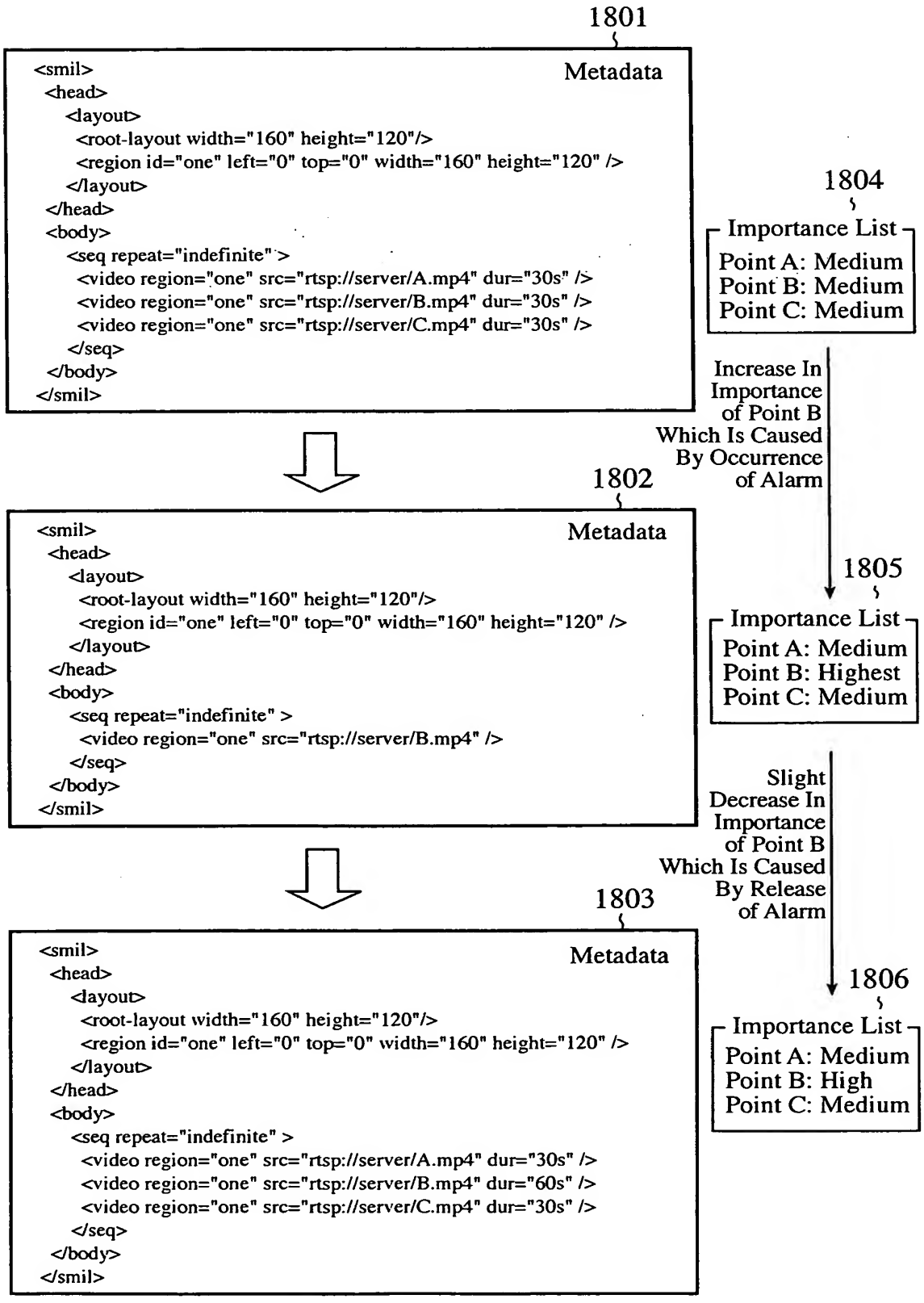

1801
Metadata
<smil>
<head>
<layout>
<root-layout width="160" height="120"/>
<region id="one" left="0" top="0" width="160" height="120" />
</layout>
</head>
<body>
<seq repeat="indefinite">
<video region="one" src="rtsp://server/A.mp4" dur="30s" />
<video region="one" src="rtsp://server/B.mp4" dur="30s" />
<video region="one" src="rtsp://server/C.mp4" dur="30s" />
</seq>
</body>
</smil>
1804
Importance List
Point A: Medium
Point B: Medium
Point C: Medium
Increase In Importance of Point B Which Is Caused By Occurrence of Alarm
1802
Metadata
<smil>
<head>
<layout>
<root-layout width="160" height="120"/>
<region id="one" left="0" top="0" width="160" height="120" />
</layout>
</head>
<body>
<seq repeat="indefinite">
<video region="one" src="rtsp://server/B.mp4" />
</seq>
</body>
</smil>
1805
Importance List
Point A: Medium
Point B: Highest
Point C: Medium
Slight Decrease In Importance of Point B Which Is Caused By Release of Alarm
1803
Metadata
<smil>
<head>
<layout>
<root-layout width="160" height="120"/>
<region id="one" left="0" top="0" width="160" height="120" />
</layout>
</head>
<body>
<seq repeat="indefinite">
<video region="one" src="rtsp://server/A.mp4" dur="30s" />
<video region="one" src="rtsp://server/B.mp4" dur="60s" />
<video region="one" src="rtsp://server/C.mp4" dur="30s" />
</seq>
</body>
</smil>
1806
Importance List
Point A: Medium
Point B: High
Point C: Medium

FIG.24

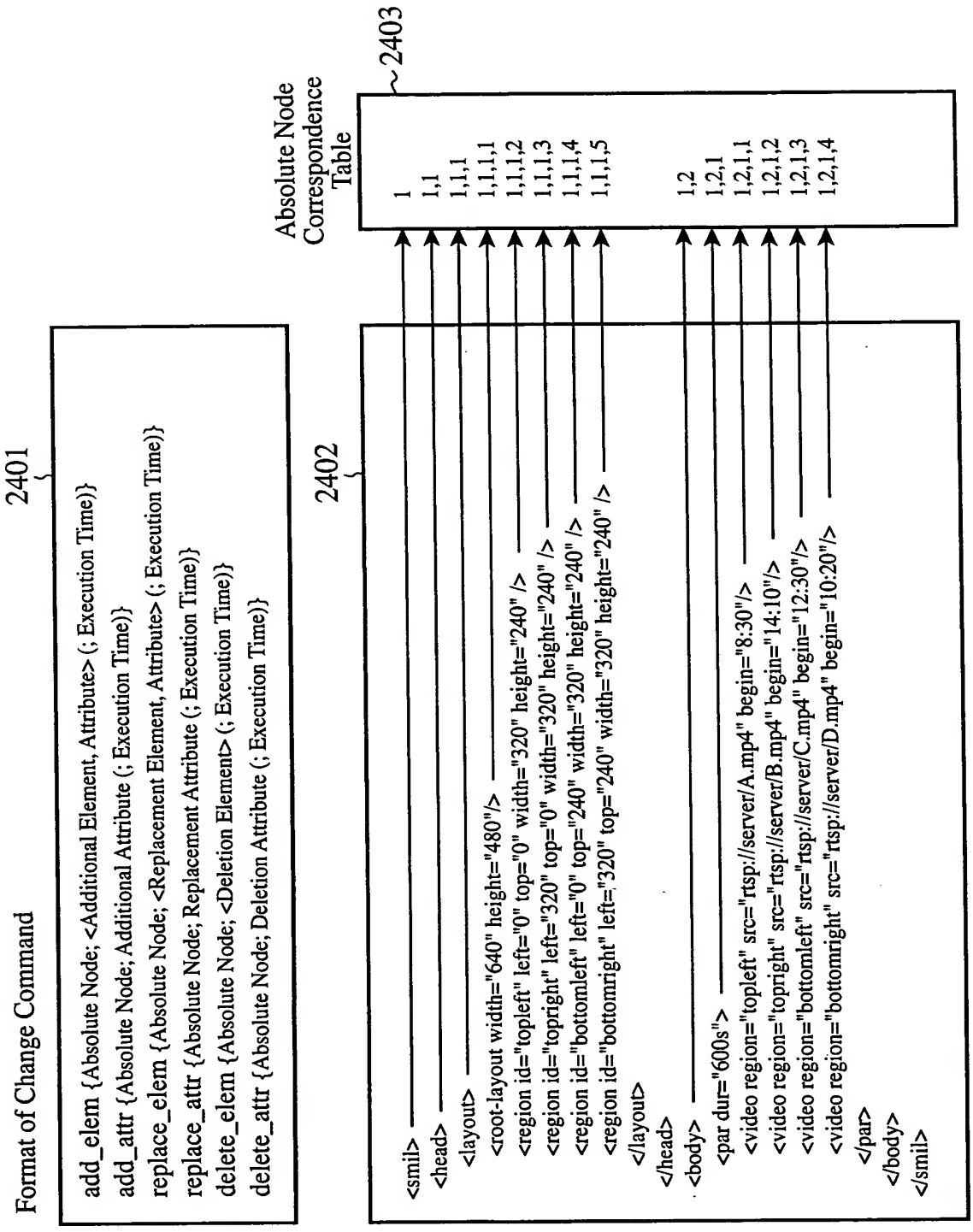

2401
Format of Change Command
add_elem {Absolute Node; <Additional Element, Attribute> (; Execution Time)}
add_attr {Absolute Node; Additional Attribute (; Execution Time)}
replace_elem {Absolute Node; <Replacement Element, Attribute> (; Execution Time)}
replace_attr {Absolute Node; Replacement Attribute (; Execution Time)}
delete_elem {Absolute Node; <Deletion Element> (; Execution Time)}
delete_attr {Absolute Node; Deletion Attribute (; Execution Time)}
2402
<smil>
<head>
<layout>
<root-layout width="640" height="480"/>
<region id="topleft" left="0" top="0" width="320" height="240" />
<region id="topright" left="320" top="0" width="320" height="240" />
<region id="bottomleft" left="0" top="240" width="320" height="240" />
<region id="bottomright" left="320" top="240" width="320" height="240" />
</layout>
</head>
<body>
<par dur="600s">
<video region="topleft" src="rtsp://server/A.mp4" begin="8:30"/>
<video region="topright" src="rtsp://server/B.mp4" begin="14:10"/>
<video region="bottomleft" src="rtsp://server/C.mp4" begin="12:30"/>
<video region="bottomright" src="rtsp://server/D.mp4" begin="10:20"/>
</par>
</body>
</smil>
Absolute Node Correspondence Table
2403
1
1,1
1,1,1
1,1,1,1
1,1,1,2
1,1,1,3
1,1,1,4
1,1,1,5
1,2
1,2,1
1,2,1,1
1,2,1,2
1,2,1,3
1,2,1,4

FIG.25

```
replace_attr {1,2,1,2;src="rtsp://server/E.mp4"}
replace_attr {1,2,1,5;src="rtsp://server/B.mp4"}
```
~1901

FIG.26

```
delete_elem {1,2,1,3}
delete_elem {1,2,1,1}
```
~2001

2002

```
add_elem{1,2,1,1;<video region="one"src="rtsp://server/A.mp4"dur="30s"/>}
add_attr{1,2,1,2;dur="60s"}
add_elem{1,2,1,3;<video region="one"src="rtsp://server/C.mp4"dur="30s"/>}
```

FIG.27

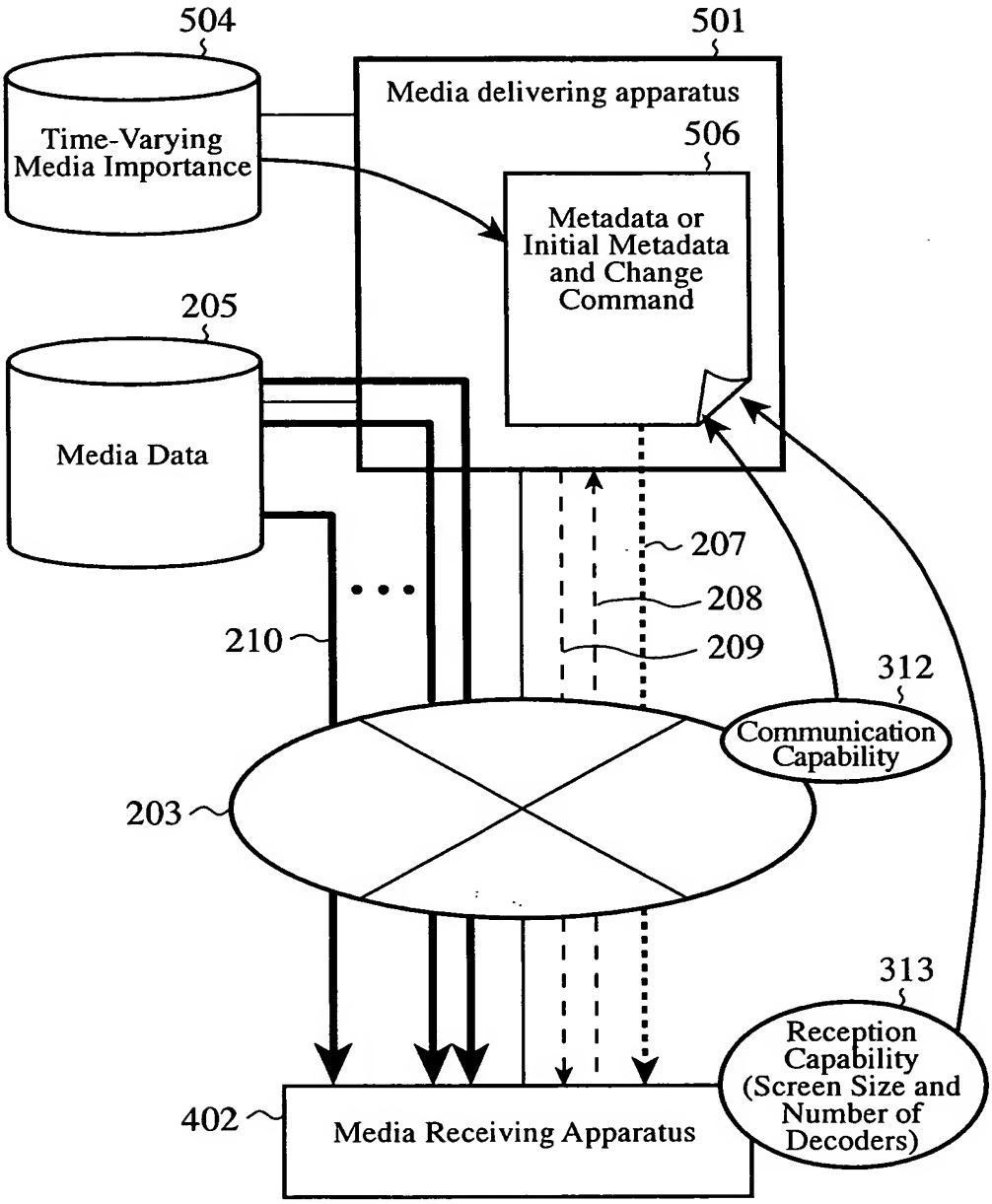

504
501
Media delivering apparatus
Time-Varying Media Importance
506
Metadata or Initial Metadata and Change Command
205
Media Data
207
208
209
210
312
Communication Capability
203
313
Reception Capability (Screen Size and Number of Decoders)
402
Media Receiving Apparatus

FIG.28

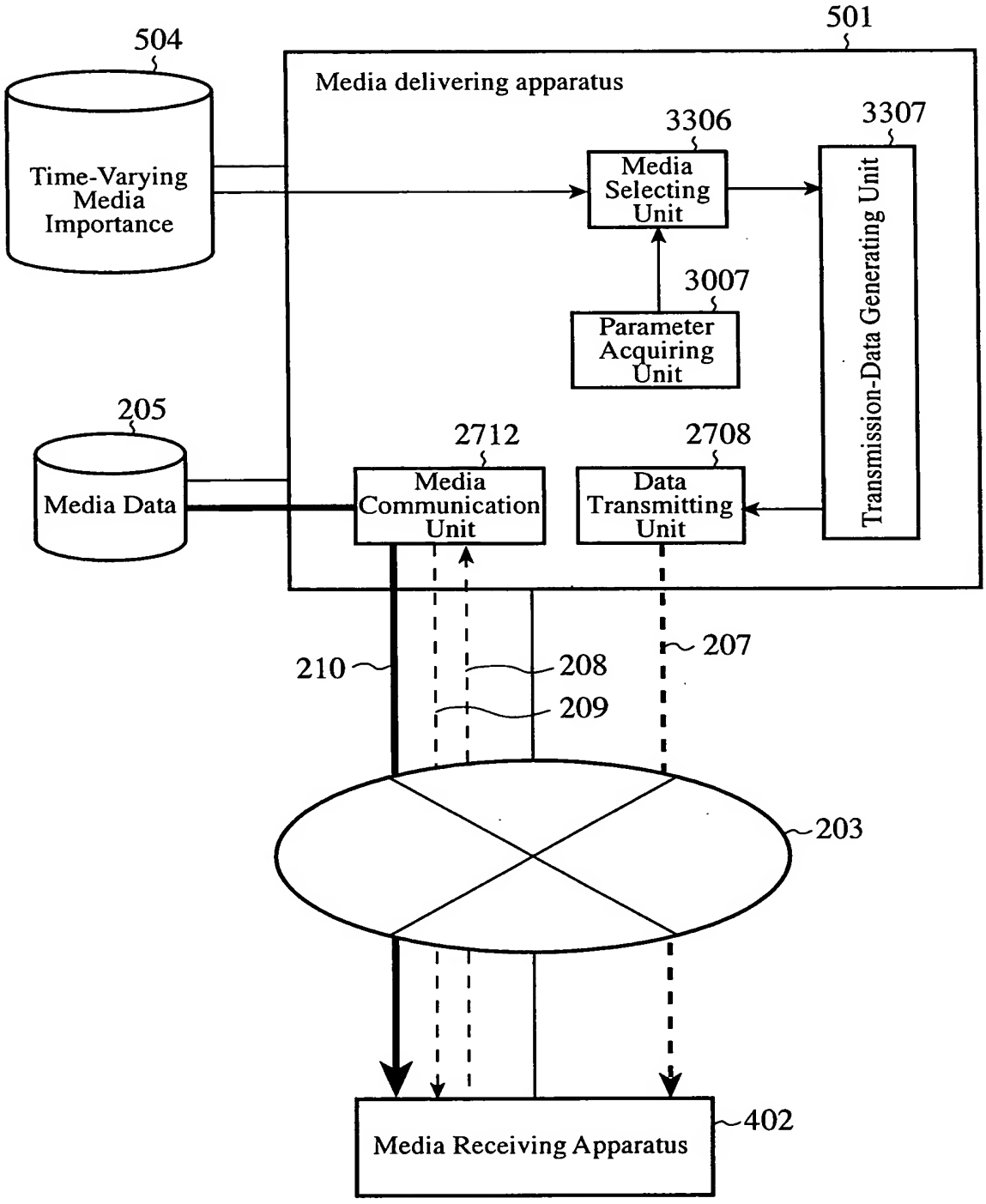

501
504
Media delivering apparatus
3306
3307
Time-Varying Media Importance
Media Selecting Unit
Transmission-Data Generating Unit
3007
Parameter Acquiring Unit
205
2712
2708
Media Data
Media Communication Unit
Data Transmitting Unit
207
210
208
209
203
Media Receiving Apparatus
402

FIG.29

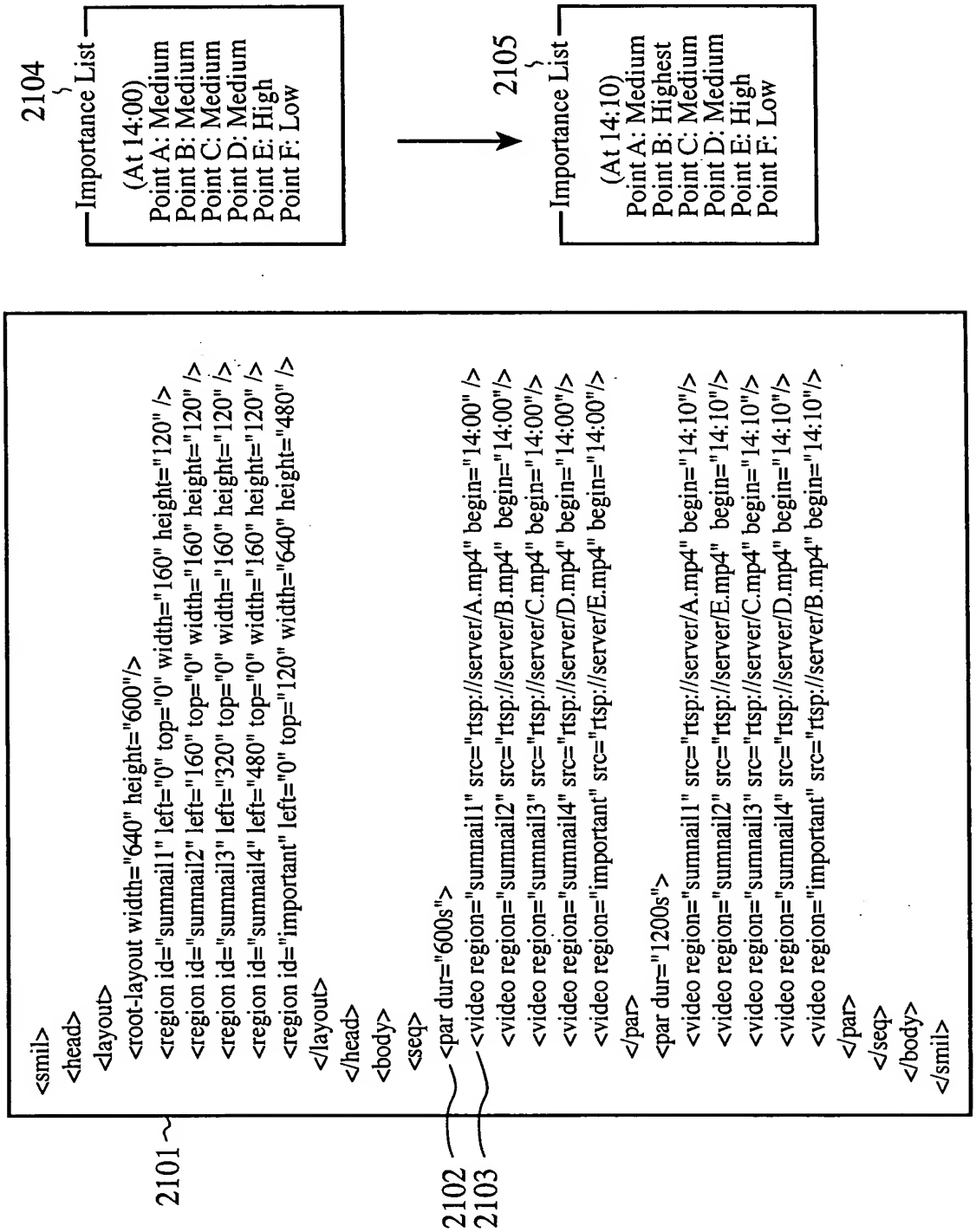

2104
Importance List
(At 14:00)
Point A: Medium
Point B: Medium
Point C: Medium
Point D: Medium
Point E: High
Point F: Low
2105
Importance List
(At 14:10)
Point A: Medium
Point B: Highest
Point C: Medium
Point D: Medium
Point E: High
Point F: Low
2101
2102
2103
<smil>
<head>
<layout>
<root-layout width="640" height="600"/>
<region id="sumnail1" left="0" top="0" width="160" height="120" />
<region id="sumnail2" left="160" top="0" width="160" height="120" />
<region id="sumnail3" left="320" top="0" width="160" height="120" />
<region id="sumnail4" left="480" top="0" width="160" height="120" />
<region id="important" left="0" top="120" width="640" height="480" />
</layout>
</head>
<body>
<seq>
<par dur="600s">
<video region="sumnail1" src="rtsp://server/A.mp4" begin="14:00" />
<video region="sumnail2" src="rtsp://server/B.mp4" begin="14:00"/>
<video region="sumnail3" src="rtsp://server/C.mp4" begin="14:00"/>
<video region="sumnail4" src="rtsp://server/D.mp4" begin="14:00"/>
<video region="important" src="rtsp://server/E.mp4" begin="14:00"/>
</par>
<par dur="1200s">
<video region="sumnail1" src="rtsp://server/A.mp4" begin="14:10"/>
<video region="sumnail2" src="rtsp://server/E.mp4" begin="14:10"/>
<video region="sumnail3" src="rtsp://server/C.mp4" begin="14:10"/>
<video region="sumnail4" src="rtsp://server/D.mp4" begin="14:10"/>
<video region="important" src="rtsp://server/B.mp4" begin="14:10"/>
</par>
</seq>
</body>
</smil>

FIG.30

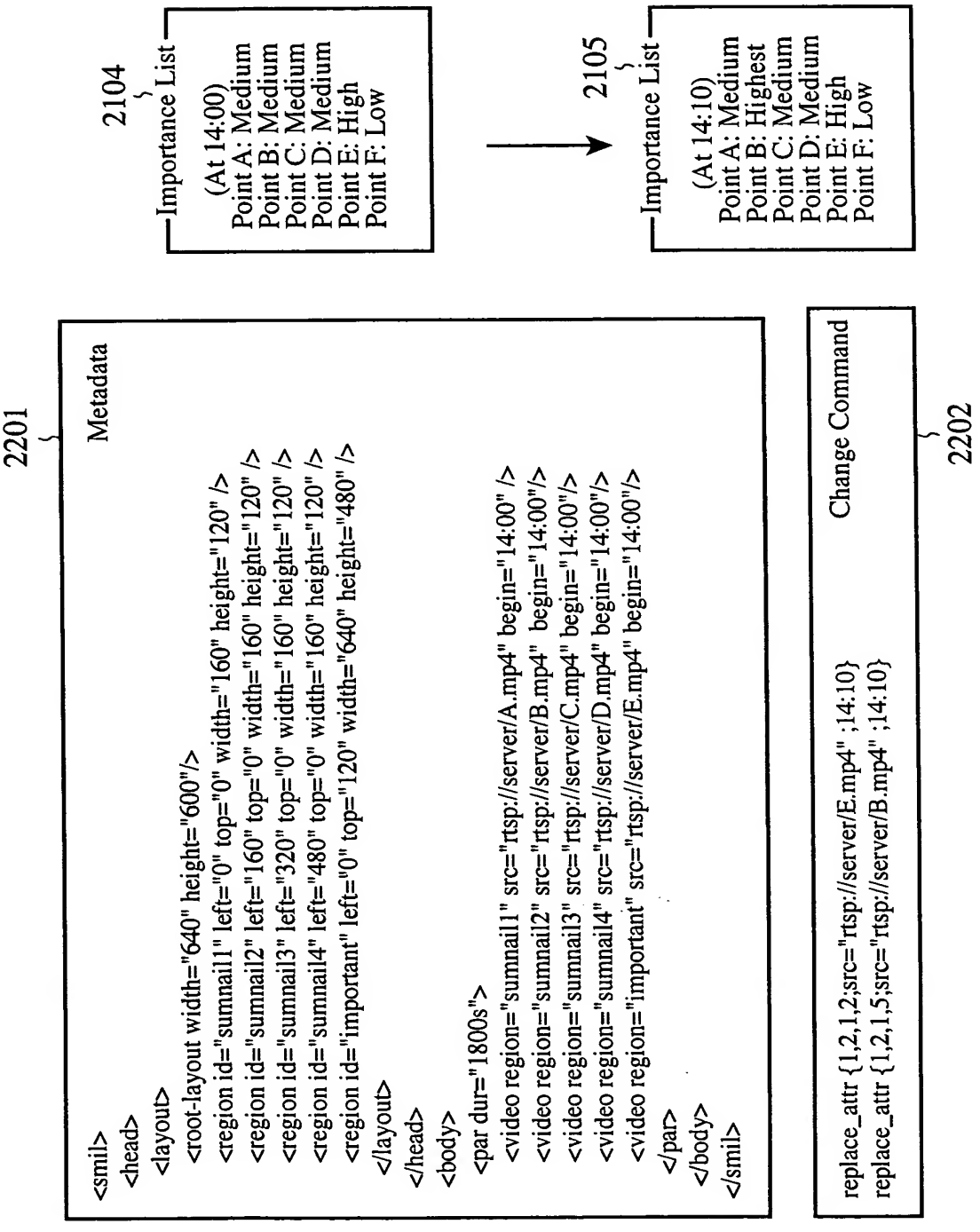
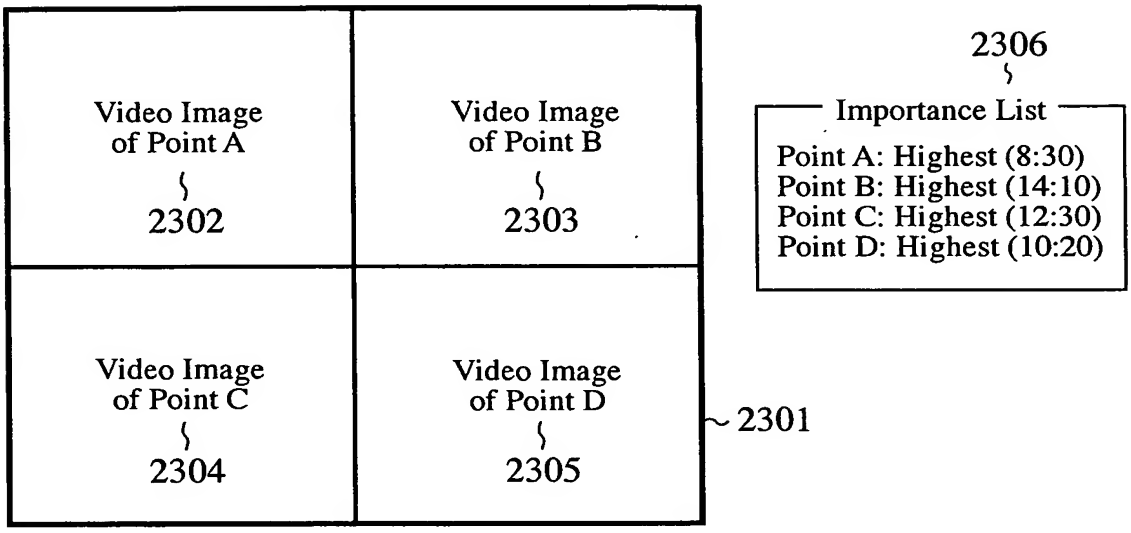

2201
Metadata
<smil>
<head>
<layout>
<root-layout width="640" height="600"/>
<region id="sumnail1" left="0" top="0" width="160" height="120" />
<region id="sumnail2" left="160" top="0" width="160" height="120" />
<region id="sumnail3" left="320" top="0" width="160" height="120" />
<region id="sumnail4" left="480" top="0" width="160" height="120" />
<region id="important" left="0" top="120" width="640" height="480" />
</layout>
</head>
<body>
<par dur="1800s">
<video region="sumnail1" src="rtsp://server/A.mp4" begin="14:00" />
<video region="sumnail2" src="rtsp://server/B.mp4" begin="14:00"/>
<video region="sumnail3" src="rtsp://server/C.mp4" begin="14:00"/>
<video region="sumnail4" src="rtsp://server/D.mp4" begin="14:00"/>
<video region="important" src="rtsp://server/E.mp4" begin="14:00"/>
</par>
</body>
</smil>
2104
Importance List
(At 14:00)
Point A: Medium
Point B: Medium
Point C: Medium
Point D: Medium
Point E: High
Point F: Low
2105
Importance List
(At 14:10)
Point A: Medium
Point B: Highest
Point C: Medium
Point D: Medium
Point E: High
Point F: Low
Change Command
replace_attr {1,2,1,2;src="rtsp://server/E.mp4" ;14:10}
replace_attr {1,2,1,5;src="rtsp://server/B.mp4" ;14:10}
2202

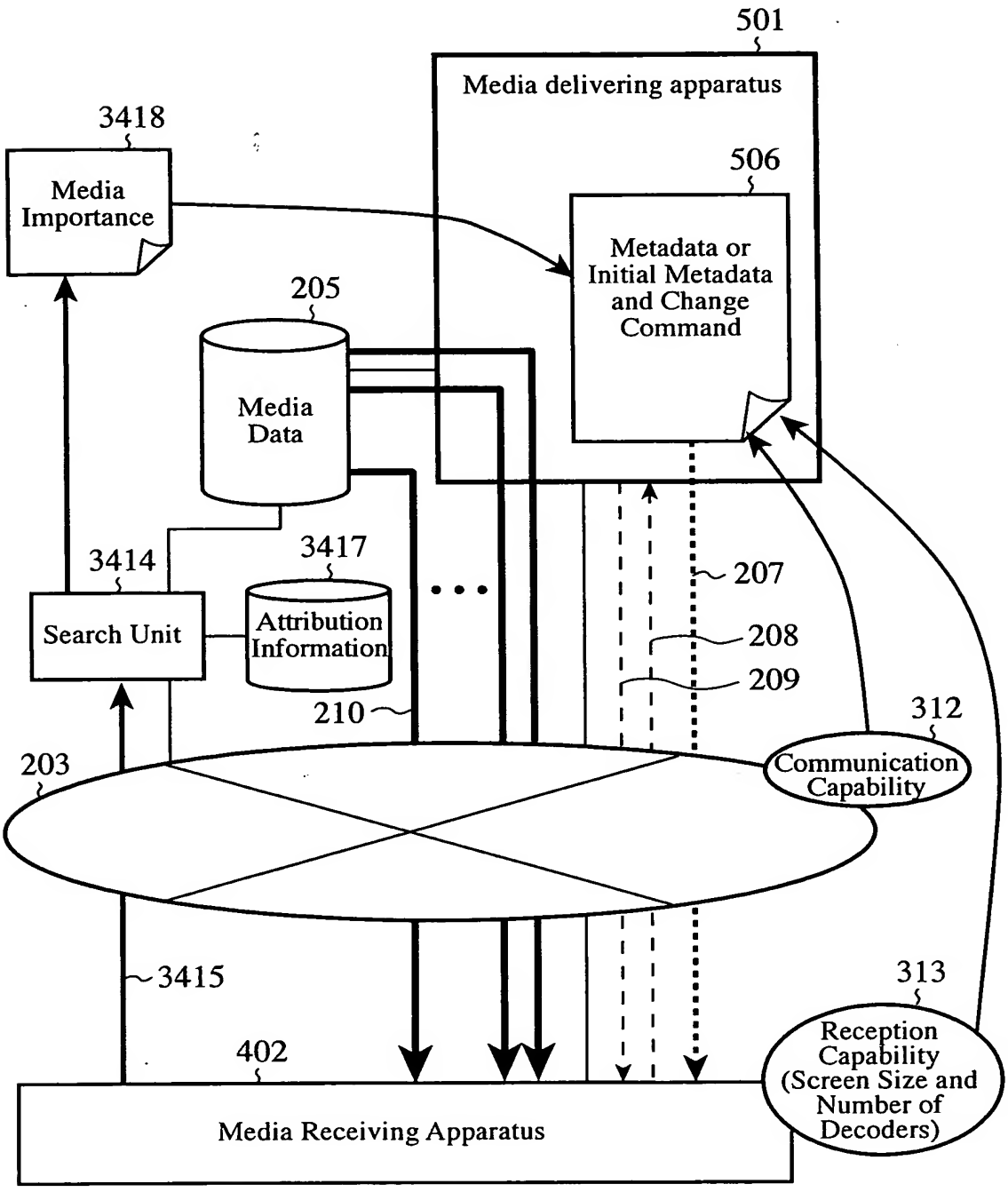
FIG.31



2307

```
<smil>
 <head>
   <layout>
    <root-layout width="640" height="480"/>
    <region id="topleft" left="0" top="0" width="320" height="240" />
    <region id="topright" left="320" top="0" width="320" height="240" />
    <region id="bottomleft" left="0" top="240" width="320" height="240" />
    <region id="bottomright" left="320" top="240" width="320" height="240" />
   </layout>
 </head>
 <body>
   <par dur="600s">
    <video region="topleft" src="rtsp://server/A.mp4" begin="8:30"/>
    <video region="topright" src="rtsp://server/B.mp4" begin="14:10"/>
    <video region="bottomleft" src="rtsp://server/C.mp4" begin="12:30"/>
    <video region="bottomright" src="rtsp://server/D.mp4" begin="10:20"/>
   </par>
 </body>
</smil>
```

FIG.32


501
Media delivering apparatus
3418
Media Importance
506
Metadata or Initial Metadata and Change Command
205
Media Data
3414
Search Unit
3417
Attribution Information
210
207
208
209
312
Communication Capability
203
3415
313
Reception Capability (Screen Size and Number of Decoders)
402
Media Receiving Apparatus